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ABSTRACT

This theme issue contains 17 articles which provide a diversity of views on the nature of creativity and how best to nurture it. Five initial articles are: "Creatively Gifted, disadvantaged Children: Their Desperate Need for Mentors" (E. Paul Torrance); "Creative Productivity: Understanding Its Sources and Nurture" (Donald J. Treffinger); "Creativity: Identifying the Unidentifiable (One Person's Opinion)" (Robert S. Sloat); "The Japanese and Creativity" (Kyoko Nakagawa); and "A Curmudgeon's Guide to the Classroom" (Jane Artabasy). Program and curriculum are examined in the following articles: "Developing Children's Creativity" (LeoNora M. Cohen); "A Model for Integrating Thinking and Process Skills into the Regular Curriculum through Gifted Education" (Steven M. Hoover); "Critical, Creative and Cooperative Thinking Activities for Gifted Math Students" (Jean Merzon); "Summer Enrichment: Time to Try an Interdisciplinary Course" (Diane G. Oppenheim); and "Creative Leadership: A New Vision for Education" (Deborah A. Weiner). Creativity in reading and writing are considered in: "Techniques for Stimulating Story Writing among Gifted Children" (Beverly Otto); "'Bravo Minski' Brings Big Thoughts to Young Readers" (William Nikola-Lisa); and "From Antique Books to Word Processing: A Whole-Language Approach Inspires Creativity in Young Gifted Authors" (Terese R. Messman). Finally, the arts are examined in the following articles: "A Wide-Eyed View of the Arts" (Lynn Schornick); "Drawing: A Process of Thinking" (Jeanie Goertz); and "A Case for Arts Education" (Joe Boyer). A paper by Edmund B. Hunt, titled "Reform: The Plight of the Gifted" (excerpted from "The Perils of Reform") concludes the issue. (DB)

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FROM THE EDITOR

Joan Franklin Smutny, Director of the Center for Gifted, National-Louis University, Evanston, Illinois

The title of Robert Sloat's article, "Creativity: Identifying the Unidentifiable (One Person's Opinion)," captures many an educator's feelings on that most illusive type of giftedness — creativity. The articles in this **Journal** reflect the diversity of opinions on the nature of creativity and how best to nurture it, offering a range of approaches, teaching methods, and applications, especially in the area of the arts.

It would seem an incomplete presentation of creativity indeed without significant statements from E. Paul Torrance and Donald Treffinger. Torrance, education's earliest pioneer on the nature of creativity, focuses on a particular population: disadvantaged, creatively gifted children, and suggests that the most effective way to nurture them is through mentors. Treffinger explores the sources of creativity and the best avenues for effectively supporting the development of creative expressions.

Kyoko Nakagawa, a professor at Seiwa College in Hyogo, Japan, spent a year studying at the Torrance Center for Creative Studies. She has written an insightful article comparing American and Japanese culture, contrasting American education's emphasis on individual self-expression and independence with Japan's values of cooperation and harmonious relations. She notes how the two culutural approaches have shaped individual expressions of creativity.

The section on **Creativity: Nature and Nurture** concludes with an irreverent, but humorous, article on the stifling effects of psychological stereotyping and labeling of children, and demands that teachers be responsive to children who, despite teachers' attempts to implement the very latest research, simply resist being pigeon-holed.

The remainder of the articles focus on curricular applications of creativity. LeoNora Cohen offers approaches for infusing the preprimary and primary classrooms with opportunities for creative thinking and problem-solving while remaining sensitive to developmentally appropriate practices. Steven Hoover argues that the best way for school systems at-large to gain an appreciation and understanding of gifted education is to take gifted education out of its isolation and encourage gifted teachers to serve as resources and mentors for all teachers and students, sharing their knowledge of thinking skills and alternative curricular design. Like Hoover, Deborah Weiner also sees the potential for gifted education to share its strengths with mainstream classrooms and upgrade education for all.

Jean Merzon took a completely innovative approach to math instruction, incorporating not only problem-solving but simulations, dramatics, puppets, art projects and creative writing into her math class. Oppenheim shares her exciting summer enrichment experience, where groups of multi-age children cooperated to create their own country, complete with a system of government, language, number systems, flags and historical time-line.

Three articles focus on creativity applied to reading and writing. Nikola-Lisa highlights a delightful book, **Bravo, Minski**, which is a tale of an extraordinarily gifted child who rivals the inventiveness of Ben Franklin and the talent of Mozart. Terese Messman also draws on past and present to create a novel, creative writing experience for her middle-schoolers. With antique books from a used book store, she and her students explore classic elements of literature that has stood the test of time. She incorporates whole-language approaches for gifted students and word-processing in the learning experience. Finally, Bev Otto targets language arts activities and curriculum for pre-primary and kindergarten children, including reading and writing activities for the gifted, but not yet literate, young child.

No discussion of creativity would be complete without elaborating on creativity and the arts. Jeanie Goertz explains how drawing has been used by great thinkers, including Leonardo da Vinci and Thomas Edison, as a means of brainstorming and stimulating productive thinking. She highlights ways in which she has used this process in the classroom, noting that students' problem-solving capabilities have improved with a visual understanding of the task. Lynn Schornick and Joe Boyer, both art educators, lament the deficiency of arts education, each making a case that the arts are too integral a part of personal growth and development for society to overlook in the educational system without effecting significant losses to society in the future.

Finally, we proffer a hard-hitting article which examines the challenges facing gifted education in the state of Illinois. Ed Hunt, coordinator of gifted education at Northeastern, zeroes in on some of the most recent issues and elicits a thoughtful response from the reader. Creative problem-solving is inherent in his approach.

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Jennifer Rinne and Cheryl Siewers, Administrative Staff of the Center for Gifted, National-Louis University, Evanston, Illinois.

CREATIVELY GIFTED, DISADVANTAGED CHILDREN: THEIR DESPERATE NEED FOR MENTORS

E. Paul Torrance, Director of Georgia Studies of Creative Behavior, Athens, Georgia

> I shall create! If not a note, a hole
> If not an overture, a desecration.

In these two lines from "Boy Breaking Glass" (1968), the Black poet, Gwendolyn Brooks, personifies the behavior of creatively gifted, disadvantaged children and their desperate need for mentors. Other poets have voiced equally awesome warnings, as have historians, educators, psychologists, and disadvantaged children, themselves.

The eminent British historian, Arnold Toynbee (1964), concedes that in a child, ability can be discouraged easily because children are more sensitive than adults and thus readier to purchase, at almost any price, the toleration that is society's alluring reward for poor-spirited conformity. He warns that the creative ability that is suppressed is by no means extinguished, and is likely to take an antisocial turn.

This two-sided nature of creativity is clearest and most misunderstood among disadvantaged children. Almost everyone who has worked honestly with these students has noted it repeatedly. For example, Sylvia Ashton-Warner noted it among the Maori children she taught in New Zealand. In her book, **Spinster**, she wrote about a boy whom she calls "Seven":

> There's one thing to be done about Seven . . . and I do it . . . Force and punishment is not the answer. In the world behind my eyes I can see a hazy picture of a volcano with two vents: one is creativeness and one is destructiveness. I sit the little chap gently down in his small desk with Tame beside him and give them each a board and clay. (Ashton-Warner, 1985, p. 12).

A Change

In the 1960's and 1970's, educators, and the public in general in the United States, became dismayed and outraged by the increased disorder, violence and destructiveness that characterized many schools. Everyone knew that a change had occurred, but it was difficult to know just what the change was.

I do not think that the feelings of anger and hate that erupted in our schools were new. When disadvantaged people are enslaved, isolated, segregated, discriminated against, or made helpless, their anger and hatred are throttled and their creativity finds outlets in unobtrusive ways. Likewise, their destructiveness is more covert. Where there is social equality, these feelings and behaviors are allowed to surface. We progress if we acknowledge them and set about to deal with them in constructive ways.

Search for Identity

Creative children, of any color, social class or ethnic group, have severe problems in their searches for identity. Many of those who have worked with creative, disadvantaged young people are convinced that this problem is much more critical and extreme among these children than among more advantaged, creative children or less creative, disadvantaged children. A junior high school student in California expressed her search rather positively:

> Me? I don't know what my potential is. Sometimes I can overestimate myself; sometimes I underestimate myself. I can sit for hours and wonder who I am. I have a body that is capable of many things. But I vaguely feel a spirit, too, a thing so abstract that I can hardly grasp it . . . I am growing to know this being bit by bit, day by day. Some day, I hope I will know who I am. (Christine Shelley, 1969, p. 3)

The "Black and proud" movement in the 1960's provided many a creative, young, Black child a useful defense in his search for identity, as the following unpublished poem, by Donna Reed of California, illustrates:

> Once I met a man walking
> down the street, He looked
> at me out of the corner of his eye.
> He said, "Hello, what's your name,
> nigger?" I said, "I might be Black
> but I am beautiful. I am not a nigger.
> I am Black and Proud.
> Are you proud of calling me a nigger?"

This assertive consciousness of Blackness, along with the literature, poetry and music it inspired, such as James Brown's **I'm Black and I'm Proud**, have been a powerful influence on the lives of Black, creative, disadvantaged, young people; however, this same animus has created very painful conflicts for many of them.

Drugs and the Search for Self-Expression

For ages, untold numbers of creative or potentially creative people have tried to aid their torturous searches for identity and creative expression through drugs. In the past, this phenomenon has perhaps been more common among disadvantaged, than among advantaged, young people and may still be, but its practice among advantaged young people seems to be increasing. For this reason, we have become more aware of it, although we have done little about providing more effective alternatives.

The following, written by a Black, disadvantaged high-school girl in Athens, Georgia, expresses an attitude that also emerged in the 1960's, common to many of these young, bright students, for many of whom it was difficult to fathom life beyond their disadvantaged environments:

> I really think life is a hassle, living with uncivilized, helpless humans. What do the older generations know about pot and drugs? Man, this is a drag, dealing dope and getting big hassles about money and other things that don't 'mount to a damn boogaloo . . . the 1900's generation talking about us addicts and being disrespectable . . .

A creative, young Harlem poet described his attitude about drug use in the following poem, entitled **One Way Ticket to Nowhere**:

> How many of you before me
> I wonder saw fit,
> To embark upon this hellafied trip.
> Tell me. How many of you
> Have paid the fare
> For a one-way ticket to Nowhere!!
> . . .
> I've been to the land of Nowhere,
> And I find I must confess
> Of all the places I've been to
> I like Nowhere best.
> So I pack my rags into my bags
> Then begin my journey at last.
> I pop six tablets into my mouth.
> I want to get Nowhere fast.
> (Craig Allen Carter, 1969, p. 23)

Research

I have long been a strong advocate of mentors (sponsors, patrons, gurus, sanseis, etc.) for creative children and young people. In my 1962 book, **Guiding Creative Talent,** I observed that "almost always, whenever creativity occurs and persists, there is some other individual or agent who plays the role of sponsor or mentor. This role is played by someone who is not a member of the peer group, but possesses prestige or power in the same social system." Such a person does several things. Regardless of his or her own views, the mentor encourages and supports the creative person in expressing and testing ideas and in thinking through things independently. The mentor protects the protege from the negative reactions of his peers long enough to try out ideas and modify them.

I found very compelling evidence in my 22-year (1958-1980) research concerning the urgent need of the disadvantaged for mentors during their early years. I studied all of the children enrolled in two schools: a public school and the Laboratory School of the University of Minnesota. Once each year, from 1958 through 1964, I administered to these students creativity tests I was developing. Most of these children's parents were professionals who could afford to give their children opportunities to develop their potentials, although the public school was almost adjacent to a low-cost housing development, referred to as "the project." There were many minority children, some of whom were too bright or too creative and could not be tolerated in the public school. Both schools had supportive parents and exceptionally good, creative teachers who encouraged and motivated their pupils with many opportunities to develop their creativity. This was an ideal situation in which to test the predictive validity of tests of creativity. These were happy, exciting places to learn and develop.

About 22 years later, we located 216 of those we had tested at the two Minnesota schools, and surveyed them with a rather detailed questionnaire which elicited information about their creative achievements (publicly recognized and acknowledged achievements, personal style and achievements), their career progress, and plans for the future. The data yielded good predictive validity data [an overall correlation coefficient of .59, better for certain measures (Torrance, 1980, 1981)].

During this follow-up survey, we also obtained data about the mentors they had had as children. Just "having a mentor" or "not having a mentor" had statistically significant correlations with each of the criteria of creative achievements (ranging from .23 to .33).

Close examination of the data revealed that the disadvantaged children from "the project" had not achieved as highly as we would have predicted based on our testing; however, the working class and culturally different from the Laboratory School tended to overachieve creatively. Thus, these findings somewhat reduced the predictive validity (through no fault of the tests).

Of the 216 surveyed, those from "the project" had had few or no opportunities to achieve. Instead, they had to devote their energies — creative and otherwise — to coping with and meeting their survival needs. None of them reported ever having a mentor. On the other hand, the working class and culturally different from the Laboratory School had had several mentors, and their parents and teachers had maintained interest in their academic success and creative achievements.

The predominant trends for women from "the project" were to drop out of school in order to care for family members, and to get married and have children before they reached the age of twenty. The working class and culturally different children from the Laboratory School had confronted many of the same problems as the children from "the project," but they had the wherewithal to solve them differently. They remained in school, despite having to care for ill or aging parents and support themselves by working.

For example, a highly creative boy from the working class at the Laboratory School had to support himself throughout his college and doctoral programs. Part of the time, he had the total responsibility of caring for both parents. His father was a "heavy drinker" and died during the boy's adolescence; his mother died several years later. Yet, there were mentors who encouraged him and assisted him in getting jobs where he could use his diverse talents (including medical illustrator, editor of the magazine of a school of engineering, director of a youth project, director/composer/arranger for a rock-and-roll band).

There was a first-grade girl from "the project" who had an I.Q. of 175 and the highest creativity score of any first-grade child that I tested in 1958-59. When I asked her teacher about her then, she told me that this child had imaginary playmates and that the school social worker and her mother were "working on the problem." Year by year, the girl's I.Q. and creativity scores dropped, and she eventually had to drop out of school to care for family members.

These observations strongly suggest that the only way to help disadvantaged, gifted children achieve their potential — and to achieve creatively — is by providing mentors for them at a very early age.

The findings derived from this research are significant:

1. Such measures as the Torrance Tests of Creative Thinking, the Alpha Biographical Inventory, Thinking Creatively with Movement and Action, and certain checklists of creative strengths of the disadvantaged and the culturally different, are not biased insofar as race and socioeconomic status are concerned.
2. Sources derived from these tests do significantly predict later creative achievement. (For example, measures of the quantity and quality of publicly recognized creative achievement, evidence of the achievement of a creative quality of life, and a creative future self-image.)
3. Mentors aid in creative achievement, yet mentors have rarely been available to children living in poverty or who come from minority backgrounds.
4. Disadvantaged, gifted children excel when they are taught creatively, and learn when they are taught experientially and when a variety of modalities are used.

Epilogue 1991: Is There Still Hope?

In 1973, at the annual meeting of the Association for the Gifted, I was honored for my "outstanding contributions" to research on disadvantaged, gifted children. At that time, even the little research being done in this area, most of which was unfunded, was beginning to grind to a halt. The ERIC Center had run a computer search for me, to identify doctoral dissertations on the disadvantaged, which revealed that I had directed more of these dissertations than anyone else. Some of us hoped, of course, that society would use this research and the few breakthroughs that had been made between 1965 and 1973, as catalysts for change, but society and the education community were not impressed with these studies.

My advocacy and I went down fighting, with my book, **Discovery and Nurturance of Giftedness in the Culturally Different** (1977) and my address at a national forum, entitled "Dare We Hope Again?" (1978). The kindest words spoken to me about the address were by a Black educator who remarked, "I know it must have taken a lot of courage to give that address." Many books on giftedness were sold at this national forum, but not a single one concerned the problems of disadvantaged children.

Now, more than a decade later, spurred by what are referred to as "the Javit's grants," there is renewed interest in the education of children reared in poverty and children from culturally different homes. I truly hope that the past research will be a valuable tool for this new advocacy, and that the research being done now will be successful, utilized in progressive ways, and achieve its avowed objectives.

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CREATIVE PRODUCTIVITY: UNDERSTANDING ITS SOURCES AND NURTURE

Donald J. Treffinger, Center for Creative Learning, Sarasota, Florida

Many theorists and researchers have emphasized the importance of creative productivity generally (e.g., Amabile, 1989; Torrance, 1979) and in many specific areas such as education (e.g., Feldhusen & Treffinger, 1985), business (Firestein, 1989), organizational leadership (e.g., Isaksen, 1987) and inventing (e.g., Flack, 1989; Treffinger, McEwen & Wittig, 1989). Creative and critical thinking and problem solving are widely recognized as fundamental goals for all people (e.g., Carnevale, Gainer & Meltzer, 1988; Costa, 1985). Creativity is often viewed as a fundamental dimension of "giftedness" (e.g., Renzulli, 1978; Treffinger & Renzulli, 1988; Treffinger, 1989). These views hold that a stronger definition of giftedness involves the demonstration of creative productivity over a sustained period of time (which might be years, or even decades), in a domain that matters greatly to the person; a weaker definition is one that views giftedness as a static category or label represented primarily by scores or status on particular tests. When people speak of "giftedness," they are much more likely to be considering the quality or impressive nature of a person's originality and productivity — his or her accomplishments over an extended period of time — than simply to be offering a testimonial to the person's test scores.

If a plausible case can be made, then, that creative productivity is an important dimension of human behavior in general and of giftedness in particular, it seems relevant and necessary to pose two key questions:

1. What do we know about the sources or essential components of creative productivity?
2. What does our knowledge of the nature of creative productivity suggest regarding its nurture?

This article will address these questions, provide a brief overview of current work, and suggest future directions for research and practice.

Sources or Components of Creative Productivity

Efforts to define the basic factors contributing to creativity are not new, and published descriptions of the components of creativity can easily be traced back several decades. Wallas (1926), for example, offered a classic paradigm that is still widely quoted today, viewing creativity as a four-stage process that involves "preparation, incubation, illumination, and verification." Many other writers have offered a wide variety of definitions of, and criteria for, creativity (more than 100 different criteria having been documented in literature; e.g., Besemer & Treffinger, 1981). Rhodes (1961) reviewed much of the literature to that time, and identified four themes — the "Four P's" of creativity (Person, Process, Product, and Press) — as a proposed synthesis of the major components of creativity. Although there has never been a single, universally-accepted definition, Rhodes' contribution and synthesis were quite valuable, and have been used widely to guide the organization of theoretical work and empirical research on creativity (Isaksen, 1987).

In view of nearly three decades of continuing research on creativity since the publication of Rhodes' article, we are now able to refine and expand our understanding of the components of creativity, to identify those components more precisely, and to incorporate some important variables that were not well established at the time of Rhodes' work. One contemporary description of the components of creative productivity, presented in Figure One, is the "C-O-C-O" model (Treffinger, 1988b).

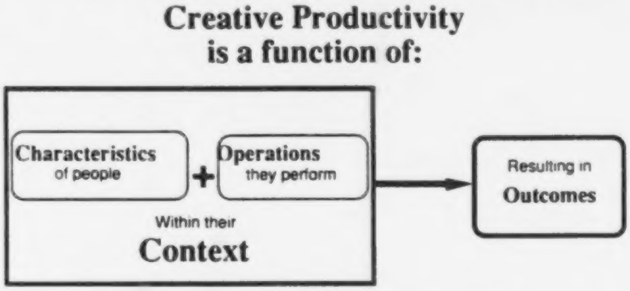


Figure One (From Treffinger, 1988b)

Characteristics. The first component of the C-O-C-O model refers to the abilities, personal characteristics or traits, preferences, attitudes, motivations and interests, and styles that will have important bearing on the degree and direction of the person's creative productivity. Rhodes referred to this area as "person," accurately portraying the nature of research at that time. Early studies focused on "the creative person" and attempted to develop lists of cognitive abilities and personality traits, seeking basic attributes that would distinguish highly creative individuals from their less creative peers. The principal questions were: "What are creative people like?" and "How can you tell if you are one?" Attention was strongly directed toward the level of creativity, inquiring whether creative ability was high or low and whether or not the student's personal traits were similar to those of "highly creative" people.

Most recent research has shown that understanding "characteristics" in relation to creative productivity is actually a much more complex concern than assessing the level of creative ability or whether the student has the personality of the "highly creative;" one's style (e.g., Kirton, 1976; Dunn and Dunn, 1978; Myers and McCaulley, 1985) describes many different ways in which creativity can be expressed, and suggests that different people will channel their energies in a variety of forms of creative productivity. When style is taken into account, we begin to ask, "How are you creative?" rather than simply, "How creative are you?" Kirton (1976), for example, distinguished between "adaptors," who use their creativity within an existing paradigm or structure, to improve it, and "innovators," who break away readily from existing structures and use their creativity to create new and different structures or products. Although the innovator is most easily recognized as "creative," the adaptor's creativity in improving existing systems, making things work better, and knowing how to "get things through the system" should not be overlooked or minimized.

Rather than limiting our view of individual creativity to a search for "the creative person," advances in the level-style distinction have helped us to understand that the characteristics of people influence not only "how much," but "in what ways" their creativity can be manifested.

Recent research also has helped to clarify the important role of knowledge in creative accomplishment, and to explore significant ways in which "experts" and "novices" differ in applying information, making decisions and solving problems. These studies suggest that creative productivity, rather than being an "all purpose" category in which the person is or is not creatively productive in all situations and contexts, may be better viewed in relation to the kinds of tasks or content areas in which people work and their degree of expertise in those domains (e.g., Resnick, 1985). Thus, they support the notion that understanding "characteristics" of creativity is a more complex challenge than merely assessing overall views of creative ability or determining the presence or absence of prescribed sets of traits.

Operations refers to the person's mastery of specific methods and strategies that can be used deliberately, alone or in group settings, to enhance the generation and refinement of ideas, analysis, decision making and problem solving. While some people may demonstrate the ability to perform these spontaneously (showing an "intuitive feeling" for creative strategies), without explicit training, it is now clear from research (e.g., Costa, 1985; Isaksen, 1987) that powerful "technologies for productive thinking" exist, and that they can be learned and successfully applied by virtually all people. There is little doubt that we can teach people to use many strategies that will enable them to increase substantially their productivity in personal and professional opportunities. These include many basic tools, such as brainstorming, skillful observation, idea checklists, making inferences and deductions (e.g., deBono, 1976; Treffinger, 1980; Feldhusen & Treffinger, 1985), as well as more complex analyses or problem-solving processes (e.g., Gordon & Poze, 1981; Isaksen & Treffinger, 1985; Marzano & Arredondo, 1986). A person's creative productivity is significantly influenced, then, not only by who he is or what he is like (the "characteristics" component), but as much, or possibly more, by what he is able to do or the "operations" he is able to perform.

Context involves a number of important environmental or situational factors that influence creative productivity. These include the personal blocks or barriers that can inhibit creative productivity, which Jones (1984) classified as strategic, (values, self-image) or perceptual, and the organizational or group barriers that can stifle the efforts of individuals or teams to function creatively. Ekvall and Tangeberg-Andersson (1986) identified, for example, ten factors in the "climate for creativity" within an organization: challenge and motivation; freedom; idea support; trust and openness; liveliness and dynamism; playfulness and humor; debates; conflict; risk taking; and idea time.

The context dimension of the C-O-C-O model, represented by personal barriers and by the aspects of the "culture" and climate of the environment in which people must operate, reminds us that, whatever personal characteristics are found among individuals and whatever strategies are at their disposal, creative productivity can be encouraged or inhibited by a variety of environmental factors, which may vary from task to task, time to time, or in relation to particular goals and interpersonal dynamics.

Outcomes, the final component of the C-O-C-O model, is concerned with the specific variables that comprise our understanding of what makes a product "creative." There is no single criterion for determining what is or is not a "creative" product. The context may influence such judgments, of course (What is the product for? Who views or judges it? When, and for what purposes or goals, is it being evaluated? To what is it being compared?). Not every product will be uniformly "high" or "low" in relation to these criteria; one product may be strong in certain criteria, but quite limited in others. Besemer and Treffinger (1981) identified fourteen criteria, in three general categories, which have appeared frequently in the literature on creativity. These are novelty (which includes original, germinal and transformational), resolution (which includes adequate, appropriate, logical, useful and valuable), and elaboration and synthesis (which include attractive, complex, elegant, expressive, organic and well crafted). The outcomes component reminds us that, despite our own characteristics, the operations we are able to use or the context in which we work, our creative productivity is also influenced by specific dimensions of the products themselves and the reactions of others to those products.

Implications for Research and Practice: 'Identification'

If we consider the complex, multi-dimensional nature of creative productivity, and also keep in mind the infinite ways in which creativity can be expressed, several implications seem evident for anyone concerned with identifying creative talent or giftedness.

First, we should not expect there to be a single, homogeneous category called "highly creative" or "creatively gifted." We should expect to find many different kinds of talents, expressed among many people, in different ways and at different times. Renzulli has often used the phrase "in certain people, at certain times, under certain circumstances," and the complexity of factors influencing creative productivity lends strong support to such a characterization.

Second, we should not attempt to view creative productivity simply as if it were something fixed, static and located entirely within the individual. It arises from the dynamic interaction among characteristics, operations, context and outcomes, so forecasting an individual's future creative productivity from his "status" on characteristics indicators, alone, would be fraught with peril. It is very likely that, especially in gifted education, we have placed so much emphasis on finding "the right people," have become so concerned about the need to identify and serve a small group, that we have overlooked the powerful challenge of becoming resources for the nurture of creativity among all people. *Not everyone will* become creatively productive, but *virtually anyone might*, and given the potentially great impact of the operations and context dimensions, it is quite likely that those who *will* become productive come from a much broader population than has traditionally been included in the rubric of "gifted" education.

A third, but related, concern is that we must learn to adopt a more flexible and dynamic approach to assessing the strengths, talents and needs of individuals. It is not adequate simply to ask whether a person's scores are high enough, or to manipulate a few numbers to formulate arbitrary "cutoff" or "eligibility" scores. Even when we speak of "multiple criteria," we frequently use several measures which share high correlations with ability or achievement scores; seldom do we take into account the complex and varied dimensions of level, style, context and operations. We would do well to develop more inclusive and flexible profiling procedures, and to monitor the data in an ongoing assessment of students' strengths, sustained interests, and needs.

Implications for Research and Practice: Nurture of Creative Productivity

Expanding our understanding of the components contributing to creative productivity also leads to several suggestions for nurturing creativity. The operations component reminds us that we can, and should, empower people by providing them with the strategies and tools they need in order to be more effective, productive thinkers. Just as a carpenter cannot create fine furniture without knowing and using the "tools of the trade," success in complex intellectual challenges requires knowledge of, and the ability to use, mental strategies and processes. We should not rely on hopes that creative productivity will result from chance or good fortune, when there are powerful tools available which can readily be learned and applied by anyone.

The model's concern for level and style also suggests that, in order to be effective, efforts to nurture creative productivity must acknowledge individual differences in style. Many individuals will learn and apply processes in different ways, so we should seek varied instructional activities and resources. Many instructional programs for teaching creative and critical thinking or problem-solving skills have not attained their maximum impact, by virtue of having failed to provide activities appropriate to the needs of different students.

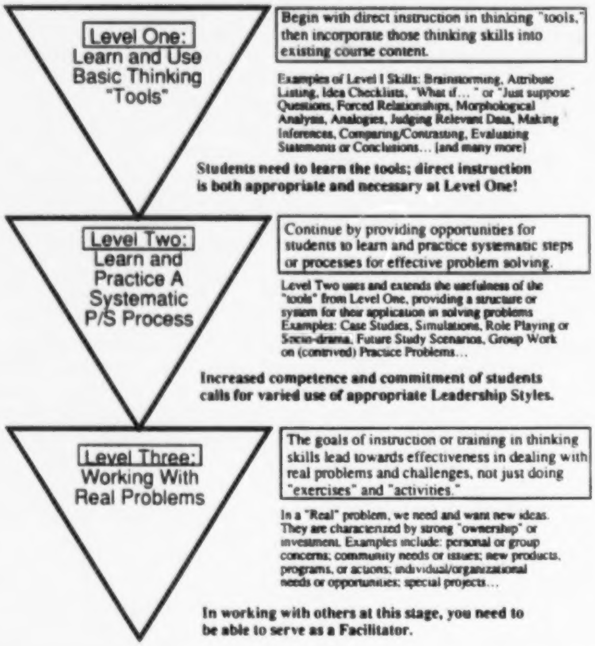
Third, it is also clear that instruction or training will be "context sensitive." In order to have positive impact, efforts to nurture creativity must attend specifically to creating and maintaining appropriate environments and climates. In this regard, we need to insure that instruction includes, for example, the attitudes, dispositions, or orientations that support productive thinking, such as understanding and acceptance of such principles as deferred and affirmative judgment (Isaksen & Treffinger, 1985). It may also be important to include skills involving effective communication, social interaction, cooperation, collaboration and teamwork. Nurturing creativity is much more complex than *teaching about* specific techniques or strategies or completing thinking-skills activities or worksheets.

Fourth, systematic instruction to nurture productive thinking must teach the "tools," but it must also include guidance and support for the use of those tools in more complex situations, then provide opportunities for those processes to be applied to real problems. A "three stage" approach to nurturing creative productivity (Treffinger, 1988a) is summarized in Figure Two. Level One represents the "basic tools" for creative and critical thinking. Level Two involves learning and practicing a systematic approach to problem solving, drawing upon and extending the basic tools, and Level Three involves applying the systematic, creative problem-solving process to real problems and challenges.

Summary

Research suggests that creative productivity is a function of the dynamic interaction among four major components: the characteristics of people, the operations they are able to use, the context in which they function and the outcomes which result from their effort. These components create a multi-dimensional framework that has important implications for the identification and nurture of creativity.

Nurturing Effective Thinking:
Instructing, Leading, and Facilitating


Level One:
Learn and Use Basic Thinking "Tools"
Level Two:
Learn and Practice A Systematic P/S Process
Level Three:
Working With Real Problems

Begin with direct instruction in thinking "tools," then incorporate those thinking skills into existing course content.

Examples of Level I Skills: Brainstorming, Attribute Listing, Idea Checklists, "What if… " or "Just suppose" Questions, Forced Relationships, Morphological Analysis, Analogies, Judging Relevant Data, Making Inferences, Comparing/Contrasting, Evaluating Statements or Conclusions… [and many more]

Students need to learn the tools; direct instruction is both appropriate and necessary at Level One!

Continue by providing opportunities for students to learn and practice systematic steps or processes for effective problem solving.

Level Two uses and extends the usefulness of the "tools" from Level One, providing a structure or system for their application in solving problems Examples: Case Studies, Simulations, Role Playing or Socio-drama, Future Study Scenarios, Group Work on (contrived) Practice Problems…

Increased competence and commitment of students calls for varied use of appropriate Leadership Styles.

The goals of instruction or training in thinking skills lead towards effectiveness in dealing with real problems and challenges, not just doing "exercises" and "activities."

In a "Real" problem, we need and want new ideas. They are characterized by strong "ownership" or investment. Examples include: personal or group concerns; community needs or issues; new products, programs, or actions; individual/organizational needs or opportunities; special projects…

In working with others at this stage, you need to be able to serve as a Facilitator.

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Figure Two, From Treffinger (1988a)

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CREATIVITY: IDENTIFYING THE UNIDENTIFIABLE (ONE PERSON'S OPINION)

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An article written on creativity in which an attempt is made to explain it in a standard, definable context without the subtitle, "One Person's Opinion," would be oxymoronic. What is creativity? Is it giftedness, as Sternberg (1990) suggested, "in terms of their sheer persistence in accomplishing things where others have given up" (p. 99)? Is it a mental process (Gallagher, 1985) or a pattern of thinking (Perkins, 1984) leading to some product or the development of a new idea or the drive to fill a need as suggested by Halpern (1984)? Or is it a process of becoming sensitive to the world and arriving at solutions to problems as Torrance (1974) has indicated? Creativity may very well be any combination of these and yet it may be only one of these.

In reviewing the many introductory college-level texts on the educating, teaching, and understanding of gifted children, one could cite dozens of different definitions of giftedness, talent and creativity, even with two or more by the same author. Perhaps the only constant in a large percentage of the definitions of creativity is some direct or indirect reference to a product (whether tangible or intangible). Some writers place an emphasis on originality, others on flexibility, and still others on elaboration. Does creativity change or does it ebb and flow with the phases of the moon or seasons of the year? Are there differences among the terms, creativity, giftedness, and talent, or are they all the same?

In presenting operational definitions of creativity, giftedness, and talent, these three terms are different in respect to an individual's orientation to thinking, learning, and producing. The gifted individual is process oriented, the talented is performance oriented, and the creative is product oriented. In expanding on the concept of the product orientation of the creative:

> . . . the product of creativity can be a physical or mental creation, or a construction by a new combination of existing objects or ideas. The product may be a work of art, or the development of a new concept growing out of old ideas or an invention . . . The orientation of the creative person is toward his or her creation. The process of creation may be exciting; even thrilling, but it is seen by the creative person as chiefly the means to an end; the creation itself . . . A creative artist's creativity is no greater if he or she stores artwork in a basement or sells each piece for thousands of dollars (Sloat, 1990, p. 38).

While the creative (product) individual is highly goal oriented, the gifted (process) individual is concerned with the utilization of higher-level thinking skills which he or she will call upon following problem introduction in order to achieve problem solution. The creative (product) individual gains satisfaction by knowing that he has produced a superior product and the satisfaction is the result of personal *internal* feedback. The talented (performance) individual is also goal oriented, and requires *external* feedback from parents, teachers, or some other type of audience in order to ascertain the quality of what he produced.

All children possess degrees of each orientation in each area; however, the creative or gifted or talented child has the potential for, or demonstrates, high levels of ability in one or more areas. In addition, it is theoretically impossible to find one with pure creativity or giftedness or talent. Overlaps do exist and a child should be identified in light of his strength in the primary, secondary, and tertiary orientation areas. When the primary and secondary areas appear to carry approximately the same emphasis, as determined by characteristics evaluation, a child may be identified as having a dual orientation. Only a very small percentage of people may be equally gifted, talented, and creative. Creative individuals can be primarily creative or creative-gifted or creative-talented or all three.

Other models which imply that all gifted children must possess all three orientations in a somewhat equal proportion, but at a higher level than their peers, may be self-limiting. When a child is high in one area, such as academic achievement, and lower in creativity or task commitment, we are told by advocates of the "must have all three" model that these students are gifted only some of the time. These students move into programs when they are in the gifted mode and out when they are not. A more reasonable way of dealing with this might be to say that task persistence or commitment is talent, academic advancement is giftedness, and creativity is creativity. When tasks require high process orientation, gifted students do well. The creative ones excel in product orientation, and talented ones excel in performance situations. The individuals with dual orientations can shift easily and that rare three-orientation individual shifts easily, regardless of most external circumstances. Students do well when they are presented with tasks that are congruent with their orientations!

I have suggested (1990) that the term, "improvisational," be used to describe the dual orientation of the creative-gifted and the term, "spontaneous," be used to describe the creative-talented. The creative-gifted, with a product and process orientation, tries to identify the process which will lead to the very best possible product. Always directing energies toward the product as a goal, this individual, during the development of the product, constantly changes and improves the process until he is satisfied. Aware of the probable need for changes as the unforeseen occurs, this individual is always in a state of readiness and demonstrates outstanding improvisational skills and abilities, but with an emphasis on product quality.

The creative-talented individual is constantly looking for a product that will please him and his audience. These two orientations may often conflict, especially if the internal feedback of the creative self is different from the external feedback received from the audience. As a result, the individual responds in an impulsive, affected manner. Changes in actions or behaviors may or may not be related to any logical process or direction; they are spontaneous. The end product may be a masterpiece or a total failure.

If one is considering creativity as being either a distinct entity or a combination of other components, it is incumbent to accept that creativity may be expressed in a myriad of ways since not all creative individuals have the same traits or characteristics. A list of only 10 characteristics could produce over 3½ million different combinations of characteristics. A creative-talented child may be far more persistent, tenacious, and intuitive than a creative-gifted one who may possess greater fluency of ideas or higher verbal skills or may be significantly more logical.

Creativity is therefore not synonymous with giftedness or talent. To assume that a child who is creative is also gifted and talented is a disservice to that child and generally places undue pressure upon that child to produce to a level which, in reality, is beyond his or her capacity. Parents and educators must first identify the learning and behavorial characteristics of a child, thus reducing the pressure often placed upon the child to behave in accordance with unattainable expectations. It is essential that teachers and parents, working together, develop a list of characteristics of each of the four types of creative orientations. Melissa Gerdes, Valerie Wittsche and I have researched and designed a comprehensive list, which we have named, **Gifted Recognition of Educational Abilities and Talents:**

The gifted child . . .

1. is process oriented
2. has high general intellectual ability
3. is more interested in the trip than the destination
4. uses deductive reasoning
5. is inquisitive
6. absorbs information rapidly
7. uses a large and varied vocabulary
8. is a consumer of ideas
9. is reluctant to review concepts already mastered
10. is multifaceted
11. is capable of total interest or disinterest
12. seeks authenticity
13. can concentrate on a topic for a long period of time
14. is intrinsically motivated
15. is logical

The creative child . . .

1. is product oriented
2. has a well developed sense of humor
3. is a creative thinker
4. is a story teller
5. is uninhibited
6. is a dreamer
7. is a risk taker
8. becomes frustrated at outside limits
9. desires variety
10. is imaginative and curious
11. is a great "what-if" question-asker
12. is self-assertive
13. is fantasy-prone
14. is highly inquisitive
15. demonstrates a high energy level

The talented child . . .

1. is performance based
2. has unusual ability in a specific area
3. is focused in a specific area of interest
4. has extensive knowledge in a specific area
5. is self-driven
6. uses intense effort and concentration
7. is audience based
8. is very competitive
9. is totally committed
10. wants to be the best
11. is adept at artistic expression
12. enjoys long-term projects
13. is intrinsically motivated
14. actively participates in in-depth research projects
15. continues after others have given up

The gifted-creative child . . .

1. is an excellent improviser
2. is easily sidetracked
3. is a divergent thinker
4. is self-confident
5. loves complexity
6. finds unique solutions to problems
7. is verbal
8. is into everything
9. is a good problem solver
10. sees abstract relationships
11. makes new applications of old ideas
12. is nonconforming
13. is a good candidate for cooperative learning
14. is inventive and resourceful
15. enjoys if/then problem solving and open-ended questions

The gifted-talented child . . .

1. is predictable
2. is a teacher pleaser
3. is easy to identify
4. wants approval
5. plays it safe
6. has tunnel vision
7. does not like to be distracted
8. has a strong need to succeed
9. is a perfectionist
10. follows timelines precisely
11. likes spelling bees and/or science fairs
12. is a list maker
13. sometimes cannot tolerate mediocrity in self or others
14. has strong opinions and is not easily swayed
15. is structured and organized

The creative-talented child . . .

1. is instinctive
2. is spontaneous
3. has inner conflict
4. is persistent toward a goal
5. is charismatic
6. is original within specialization area
7. is impetuous
8. is a divergent thinker
9. elaborates a great deal
10. sometimes appears to invent answers
11. loves complex concepts
12. forces relationships of ideas
13. is an embellisher
14. is highly creative in some areas and highly capable in others
15. does things with a flair

The gifted-creative-talented child . . .

1. is a shining star
2. is self-driven
3. is well rounded
4. is highly sensitive
5. is well balanced
6. is introspective
7. is strong willed
8. is self-confident
9. is attentive to details
10. is empathetic and intuitive
11. knows what is important
12. has a sense of the significant
13. is a "whiz kid"
14. is unique, persevering and astute at the same time

The traits that have been identified for one group are not mutually exclusive of other groups; however, within the particular groups specific traits are much more prominent. The traits identified (and the concept suggested) serve as a beginning for all those interested in providing the most appropriate educational environment for highly creative children. Certainly the seeds of creativity exist and grow within *all* children, but in only a few do they blossom to an extraordinary degree. With these children there is an exigent need for parents and teachers to provide an extra special nurturing environment and an understanding of this unique and wonderful gift.

That is one person's opinion.

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THE JAPANESE AND CREATIVITY

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It is now almost ten months since I came to the United States. During this period, I have visited many daycare centers, kindergartens and elementary schools. Wherever in the world I go, I find sweet little boys and girls. When I was often homesick, owing to the foreign language and unfamiliar customs, I was comforted and pleased by meeting children.

My last name is Nakagawa. Americans seem to have difficulty pronouncing it. I was invited here by the Torrance Center for Creative Studies, of the University of Georgia. As soon as I arrived, the Director of the Center energetically introduced me to about twenty people; however, not once did she succeed in pronouncing my name correctly. I had many similar experiences, and was just about to give up hope that America would ever pronounce my last name as I was accustomed to hearing it, when I had a pleasant surprise. In an elementary school where I had become acquainted with a number of children, I passed a girl who said, "Hello, Miss Na-ka-ga-wa." She pronounced my name beautifully! It reminded me of how flexible children are and how quickly they are able to absorb new things.

American Children and Japanese Children

As I visited classes at the Center, I began to notice major differences between American and Japanese children. One of them is that American children are able to express themselves clearly. They raise their hands and speak often. They feel free to have their own opinions and they communicate them effectively. Although I saw a few incidents indicating that greater importance was given to "saying something" than to "what was said," I was impressed by the children who tried to express themselves positively.

Since Americans have been accustomed to such behavior since childhood, it is quite natural that intellectual discourse between teachers and students occurs often in post-graduate classes here. Not so in Japan. For years, Japanese education was under the influence of Confucianism. There still exists the belief that teachers ought to be respected to the extent that it would be considered irreverent for a student to address his teacher as he would his peer. The old saying is, "You should be three steps behind your teacher lest you tread on his shadow." This spirit is gradually losing its credence, although there remain some teachers who may look back on the good old days with nostalgia.

Japanese society is a "managed society." As a result, fair and relaxed relations do not easily develop between teachers and pupils who never have been trained or encouraged to discuss things openly. Although in recent years, Japanese society has demanded that its people express themselves positively, such a fundamental change in societal behavior cannot come about in a day. Being a teacher at the college level in Japan, I sometimes envy the way classes are taught in America.

Another difference I noticed is the way American children are encouraged to develop "unique characteristics." In a class for gifted elementary school children, the teacher read a familiar picture book and the children were asked to write spin-offs from it. They wrote their stories, complete with illustrations, within a few days. As the teacher presented each literary creation to the rest of the class, she expressed repeatedly, "Look. These are all different. Each of you was able to think of a story and draw pictures different than the others."

A friend of mine from Japan, who married an American and brought up a child in the United States, once told me that American television often communicated to its young audiences such things as, "You are a unique child, one of a kind." Although vast numbers of children watch such programs across the country, each child probably feels that such words are specifically directed to him or her. It seems that Americans find a great deal of significance in being "a unique human being, different from the rest," or in being able to develop ideas that are different than those of others. This is an important aspect of creativity.

Another thing that impressed me was the children's keen responsiveness. In an art class, for instance, the children were very quick to respond to the teacher's instructions, pick up the materials and dig right in. I visited several art classes and saw very few children who were reluctant or at a loss as to what to make or how. At the time, I was also auditing an art education class at the University, and the experience there was similar. My classmates started working on assignments given by the teacher almost immediately, while I was often wanting for how to begin or what to do. I suppose that even Japanese children are faster than I, but they are certainly not as speedy as their American counterparts.

American children are encouraged to develop their own standards of value — for themselves and their work — rather than rely completely on others for recognition and approval. When children seek approval from teachers and parents, asking such questions as "Do you like this?" "Is this good?" the questions are generally directed back to the children: "Do **you** like it?" "Do **you** think you have done your best?" During an art class in an elementary school, the children were designing badges for a contest on healthy diets. I praised a girl for her work. She said, "Oh, do you like this?"

In this nation of individualism, children are required from young ages to become self-reliant, independent, and to learn to think for themselves. This strong-mindedness, plus living with the consciousness that everyone is different (broad-mindedness), produces the uniquely American mind-set. This must be the source of America's creativity.

In Japan, we are often required to place emphasis on acting as "members of a community." In our background is an agricultural people who lived by working together in rice fields. In a traditional Japanese comedy, negotiations with neighbors over the channeling of water into a farmer's rice paddies are highlighted. The play points out that in the former culture, which revolved around the rice crops, the human relations in a community was the most important element affecting the farming and the lives of individuals. That which is born and well established in history and handed down as a culture does not soon die. In such a society, it is of primary importance for the individual to have harmonious character. In work places and organizations in Japan, we are often asked if we can cooperate with others in attaining objectives. It does not matter how talented or skilled a person may be; if he cannot interact harmoniously, he could be thrown out.

Since World War II, establishing a sense of self in the Western way has been a theme in Japanese education. In turn, Japanese culture is seeing an inflow of this modern Western view of finding value in a strong sense of self; and the Japanese are facing the challenge of fostering and strengthening this sense of self.

In contrast, the United States and Europe are experiencing problems due to the deterioration of community linkages and the growth of social isolation. Western interest in Oriental philosophy and religions has been sparked by such a loss of "relatedness." These problems are complex. We should avoid solutions based on a simplistic choice between one system or the other, and instead assume the task of integrating them. Integrating these two ostensibly opposite value systems would be a truly creative endeavor.

Traditional Infant-Rearing in Japan

Pre-modern Japan regarded children under the age of seven as "pure infants." European agricultural society, from the medieval period to the 19th century, considered age seven "l'age de raison" (the age of reason). After age seven, children would begin helping their parents with work. A tribe in Africa referred to the period of life up to age six as an "ashy period," and upon reaching age seven, children began to work with adults. Historians and cultural anthropologists say such beliefs were commonly held throughout the world.

In Japan, before modern medicine, the saying that "infants under seven are among gods" was representative of the special consideration and reverence given children of that age group, based on the people's understanding of the social and physiological immaturity of infants. They were thought of as frail beings who tended to journey to the world beyond. They were considered ambiguous, with unstable souls that were somewhere between humans and gods. Because the people believed infants to be "among gods," they treated them with great care, hoping to strengthen the innocent, helpless infants by affirming and emphasizing their membership in the world of gods. In divine service, infants often were given the role of sacred beings.

Infant-rearing included a number of customary events, the most significant of which was that of "eating together." It was believed that food produced a bond among the people who ate it together. At festive times, the parents of an infant asked as many villagers as possible to share in their meals, in an effort to have their infant recognized and to instill in him a strong sense of cooperation. In addition, each infant had many fictitious parents. Among them were the midwife, a godparent and a finder parent. The baby would be deserted, in order to be discovered by its "finder parent" and born again, much stronger. Virtually, an infant was not born to only two parents, but to a community as a "village infant" and brought up among the village people.

First birthdays were interesting events. The birthday child was placed upright, with a large rice cake fastened to his back, and encouraged to walk. If he could not walk, the parents and villagers prayed for his growth through the power of the rice cake, a sacred food believed to give power to infants. If the infant walked smoothly, the people threw small rice cakes in front of him so that he would stumble. This represented their concern that his growth would be too rapid. Slower-than-average growth was a definite source of worry, but growth that was too rapid was not especially pleasing, either. "Being average" was considered "being good in everything," because harmony, rather than individuality, was valued. Better-than-average abilities were considered a vice rather than a virture. These days, most parents are pleased if their infants grow faster than others.

Formal Education: The Children's Groups

The Meiji era (17th century) saw the advent of "children's groups," completely autonomous groups of seven- to fifteen-year-old children. From birth to age six, children were educated primarily by their parents. After their seventh birthday, they began their formal education by joining children's groups.

The oldest children acted as the leaders, and there was a strict hierarchy based on age. It was not unusual for a child who had been spoiled or disobedient at home to be quite obedient to the senior members of his group, whom he considered attractive and full of dignity. The older children in the groups developed responsibility and leadership, by caring for the younger members and assuming the groups' organization and management.

Play was the focus of activity and virtually the children's whole life. Older members handed down traditional games and instructed the younger members as to their meanings and complexities. They also created new games, thinking out the rules and teaching and conducting them within their groups. Children received their education through this constant, mutual contact with peers and between senior and junior members, enhanced by the splendid, natural dynamism of a group consisting of children of different ages. Their process and play inspired creativity, provided a treasure house of knowledge, and gave them the skills to live.

Children's groups also were an important part of annual events and festivals in their villages. The children planned and made preparations for the events, and rehearsed the various roles and responsibilities they would assume. For this reason, these occasions were of high significance to the village people. It was a great pleasure for them to see their children entrusted with so much responsibility. These days, so much of the world of children is separate from that of adults. It seems to me that opportunities for children and adults to work together toward common objectives would be very meaningful for both groups.

The children's groups provided a world quite free of adult intervention. In contrast, today's children are surrounded by a network of adult management. Under such a network, children can have no thrilling secrets among themselves and freedom is quite restricted. Where there is no freedom, creativity withers. It is now necessary to restore to children a world of free play and creativity.

The Spirit of the Japanese People

The spirit of a people is deeply connected to their land. America is a vast land. I had a number of chances to travel in this Country. I would often board a plane, fly many, many hours, and still be in America when I landed. It reminded me of how tough the people who developed the Country must have been. In the days of exploration, people's houses were many miles apart, so it is easy to imagine how strong a sense of independence the people had. Even today, houses in the countryside are quite far apart. I wonder if these people do not feel lonely. Assuming that people's environments affect their spirit, the vast land is no doubt one of the factors that has given Americans such a strong sense of self. The culture they have achieved is dynamic. Buildings and roads are large in scale. This vastness and separateness are reflected in the people's creativity.

Lafcadio Hearn arrived in Japan on a beautiful day in April 1890. In **My First Day in the Orient,** he described his first impression of Yokohama:

> Elfish everything seems; for everything as well as
> everybody is small, and clear and mysterious; the
> little houses under their blue roofs, little shopfronts,
> hung with blue, and smiling little people in their
> blue costumes.

Everything must have looked very small to the man who had come from a large country. There is no vast land for the individual to enjoy, for land and rent are prohibitively high-priced. (This must seem incredible to many Americans, who live comfortably in large houses with gardens.)

Japan is a small country — but this "smallness" has influenced the spirit of the Japanese people and caused them to evolve a unique culture. The creativity of the Japanese people is found in the making of small things. There is a painter who draws pictures on grains of rice. I once told this to an American friend. A fledgling painter, she asked me in surprise, "Does he draw on a single grain of rice or a chain of grains?" I said, "Of course, he draws on a single grain." Japanese children are fond of such play as "origami," the art in which tiny things are made with clever fingers, folding paper into various figures. You will find that most objects of Japanese art and craft express this quality of "smallness" that is unique to Japanese culture.

Haiku and waka are also inherent in Japanese culture. Haiku is a 17-syllabled (5-7-5) poem and waka, a 31-syllabled (5-7-5-7-7) poem. Both depict natural scenes and human emotion. Haiku is the world's smallest form of poetry, yet not too short to be artful; the imagination of the haiku and waka poets is not truncated. We can often find greater excitement in a limited number of characters than in a poem of many stanzas. We catch a glimpse of a different world in the tiny poem. Even the cosmos may be condensed into a small, palpable world. The infinite cannot be understood nearly as readily as the finite. This is the beauty of haiku and waka.

In 1888, Samuel Bing wrote the following passage for the first issue of **Le Japon Artistique,** published in Paris:

> The Japanese are poets moved and inspired by the great spectacle of nature and attentive observers of the familiar mysteries of a world of exceeding minuteness. They learn geometry from the spider's web, take decorative motifs from the tracks of a bird across the snow, and receive inspiration for curved designs from the ripples of wind on the water. In short, they believe that the fundamental elements of all things are to be found in nature. They believe that there is nothing in the world of creation that is not suited to the high ideals of art. Even a single blade of grass. If I am not mistaken, this is the most important and the most profitable lesson we can learn from these people.

The roots of Japanese culture sprung from the sense of **unity** of man and nature acquired naturally during the people's many centuries in the rice fields. These roots compose the basis of their sentiments in daily life. In this respect, the origins of Japanese culture form a striking contrast with historic Americana, where the people's **confrontation** with nature encouraged the strong sense of self so evident in their culture today.

The Japanese grasp the essence of things through their total contact with nature — through their sharply refined senses — rather than through mental activity. Bing touched upon this idea. Another scholar perceived it this way: "Historically, Japanese have never been accustomed to any systematic thought."

The term that most clearly depicts the sensory way of living of the Japanese is probably the "pathos of things." It is very difficult to explain the pathos of things. Roughly, it may be defined as a kind of love of destiny. It is a beauty originating from a sense of unity with nature, wherein man is born in nature, lives with nature and perishes with nature. All morals in daily life are evolved from this concept. The pathos of things, I think, is the antithesis of the Western establishment of "self." The pathos of things is based on the inclination to accept nature and mature with nature, instead of establishing identity through conquering the land. For the Japanese people who hold such a view of the world, the importance of "feeling" outweighs that of "thinking." The people's harmony with nature — and the harmony among those who "feel" nature — is a beauty unique to Japan.

This concept is said to be the essence of the **Tale of Genji,** a Japanese classic of the 11th century. In this masterpiece, Hikaru Genji is the prime minister and the hero, but he weeps often. He weeps at the light of the moon. He weeps at the sound of the wind. He weeps not from sorrow, but from what may be called the consciousness of the uncertainty of everything that is of this world. He represents a man who lives not by reasoning, but in the world of sense. It is the image of medieval man, who himself felt no difficulty merging into nature and becoming an integral part of it.

In 20th century Japan, priority is given to "vertical relations." A great deal of individual and collective energy must be spent on keeping good human relations, thus making it easier for people to live without a highly developed consciousness of individual self-worth. This relates to Japan's unique way of communication, based on "guessing" other people's feelings — attempting to understand feelings not expressed in words.

Suppose that my friend wants to tell me "No." She does not clearly say so. She gives a somewhat vague answer, reluctant to hurt my feelings by answering directly. Sensing this, I "guess," or understand **in my mind,** that her answer is "No." This may seem puzzling or even irrational to Westerners, but it is altogether the ability to sympathize with others. This ability requires sensitivity and intuition — elements essential to creative thinking — which tend to be undervalued in societies based on logic and rational thinking.

Conclusion

In the Japanese Folk Art class I visited in the Challenge program at the Torrance Center for Creative Studies, children learned about a variety of Japanese folk craft, such as china, dyed goods, textiles and paper. They watched a video about how these articles are made. Watching with them, I saw images of people who love nature, thank nature, and live as a part of nature. "Every good thing demands much time, trouble and love," I thought.

What of the destiny of the modern man, who feels impelled to live as an "individual" in the consciousness of "self?" It is undeniable that we physically or practically cannot live "alone," but neither must we live apart spiritually. New strength and conscious effort are needed to tie people together in this way. In **The Courage to Create,** Rollo May wrote:

> I call it social courage. It is the courage of a person
> to try to have contact with others. It is the ability
> of a person to expose his self to risk in the hope
> of building close relations with others.

The progress of technology has given us a great deal of convenience and substantial time savings. Modern nationalism has given us the freedom to live as individuals. We see ourselves as having gained, but we must also carefully assess things lost. We have lost to a large extent the ability to live in harmony with nature or with other people and the fresh sensitivity that fosters that ability. We have to recover them. I believe that real creativity for the future will be born of our recognition of this fact.

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A CURMUDGEON'S GUIDE TO THE CLASSROOM

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I have nothing against methods classes, and there is nothing wrong with techniques, strategies and prickly pedagogy; but for me, it is more fun to traverse the mine fields of a teaching day on mental tiptoes, picking my way along a haphazard path of aphorisms, epigrams and one-liners. Where from? Not from texts of dissertations. I prefer more accessible information, like bumper stickers, comic strips, newspaper fillers and fortune cookies. Those who thrill to Piaget, Jung or Skinner, be my guests; but Woody Allen, Ogden Nash and Oscar Wilde can help, too. I am not anti-intellectual, just desperate, and forever unwilling to devalue that blessed gift of childhood — silliness.

For instance, Eddie Joe stashes seaweed from the class aquarium in Miss Jones' grade book. If she is thoroughly grounded in her methods stuff, she probably will respond with some homogenized gobbledygook: "Now, Eddie Joe, I feel angry that my materials have been ruined. You have a choice. You may either clean the aquarium or write me an apology. Your behavior is inappropriate and has taken valuable instruction time away from the class." If Miss Jones were ignorant of the latest good-teacher behaviors, she might instead bellow out "Eddie Joe, so help me! You clean this seaweed up right now, or I'll feed your right pinkie to the piranha!" This direct approach probably will frighten and traumatize little Eddie Joe, but at least he will not atrophy of boredom, all too secure in the foreknowledge of Miss Jones' measured, careful response to whatever mischief he might bestow on her.

The overriding veto of too much dependency on research is Eddie Joe, himself, with his Metallica tee-shirt and his crud-encrusted tennis shoes. Deep down, beyond his ability to articulate it, Eddie Joe resents being either a control or a variable in an experiment. (Even lowly lab rats resent it.) Every fiber of Eddie Joe's primordial mentality yearns for unpredictability, from himself and others. Sure, he wants structure, but not a plaster mold! He stubbornly resists the degradation of categorization and definition.

Just when Miss Jones concludes that he is manic-depressive, or passive-aggressive, or a member of the 82nd percentile, Eddie Joe will deep-six the entire process. Usually morose and sullen, he might actually smile (especially if the aquarium gets knocked over); or, he might, on the next achievement test, escape the 82nd percentile by choosing the 75th, just to spite the seeming obvious.

What is my point? Society is taking increasingly stronger exception to stereotyping people by racial, economic, social, or religious measures; yet many educational institutions are reducing students to categories and concreting methodology to fit the preconceptions around them. Eddie Joe is called psychologically disturbed, behaviorally disordered, or socially maladjusted. Surrounded by labels, diagnostic skills, and test batteries, teachers take refuge in an apparent competency.

Despite the convenience of such a facile professionalism, we know instinctively that we cannot rely on universal applications of expertise. Why? Because our students are not collective globs of learning tissue. They are painfully, exasperatingly individual. Eddie Joe is unique. No one in the history or future of the world will ever take quite the same path to enlightenment. ("Thank God," sighs Miss Jones.) Whether we like it or not, with all our Eddie Joe's, we are on perennially uncharted ground. How well we teach them is not just a function of what we know, but of who we are.

Sometimes, our surest generalizations, our safest assumptions, explode in our faces. For instance, assuming low-achieving students can do only "so much," we can be blind to that moment on Tuesday at 2:00, when one of them far exceeds what we ever thought possible. We cannot afford to miss those precious moments simply because they did not occur as a result of sequential instruction, or as a corollary to our "Psych for Teachers" course.

Here, in a spirit of willful confusion and studied ignorance, are a few ideas on surviving Eddie Joe encounters. None of them has been subjected to rigorous testing or even panel discussions.

"People think love is an emotion. Love is good sense." (anon.)

One of the givens in our line of work is the continuing face-off of personalities in the faculty lounge. One faction would suffocate Eddie Joe with tender, loving care, while the other would "shape him up, or ship him out." They are both right, and if Eddie Joe can find a teacher to do both, he will have it made. Love, or affection between teacher and student, is not limited to one particular form of expression. A yell can be as caring as a whisper, and be perceived as such. A glare can make as much connection as a smile, depending on who sends it and how honest it is.

Love is not a weak-kneed feeling of warm fuzzies and teddie bears. It is a powerful, liberating, no-nonsense necessity. Who can muster the will to learn if he does not feel the respect of the one who would teach him? If the student senses that his inherent dignity and worth are a given, he will reach out and up for a forward step. He will take the risk. It is not a question of the teachers choosing between business or baby talk. Miss Jones can smile and joke with Eddie Joe and still project the determination of being on him like a bee on honey. Such is the highest mode of love.

"Boredom is rage spread thin." (anon.)

Most of us love seeing happy, involved faces in our classrooms. Our lesson is working! But realistically, we do not get too bent out of shape if occasionally our class takes on an attitude of passive acceptance, so long as it is not disintegrating before our eyes. We average one or two fantastic teaching days a week, two or three "medium" ones, and maybe one major stinkeroo. Dullness is as much the enemy of learning as unfocused anger is. The glazed eyes and vacant faces, the ones daydreaming of MTV and the mall, can be more resistant to learning than the ones writing naughties on the desk or hanging from the light fixtures. At least with the latter students, there is an energy to hook into, to exploit. The challenge is to change the negatives to positives. The potential is there. We can find the point of personal interest and shape it into a learning experience or a living experience occurring within the school day: an art lesson based on record album covers or a writing assignment around a big sports event.

Those who tune out on a regular basis are the rub. Somehow, these wandering souls need to rediscover school time as real time, not limbo. School must cease being a surrealistic, distant, impersonal, and irrelevant interruption to their real lives. No matter what it takes, shake some life and emotion into and out of them: opinions, reactions, laughter, whatever. Infuse mental adrenaline. Talk first as a person, much later as a teacher. Find out who they are and where they live in their dream world.

Every child needs to know that he or she is filling an important space in the world. They all need desperately to feel connections, to themselves, to teachers and to peers and parents. Do not accept a sense of "drift." Just because their behavior poses no threat to your authority does not mean that it is safe. Constantly spacing out is one of the more sinister forms of self-denial. These students remove themselves from the spark of the moment. Wake them up, bring them back, even if the temporary price is classroom tranquility. Tap dance in tights on the principal's desk, if you must!

"When one burns one's bridges, what a very nice fire it makes." (Dylan Thomas)

One of the heaviest burdens for any school is an omniscient, master teacher on the prowl. That is not to say we cannot be good, even gifted, on any given day; but the instant we learn all the answers, we will have forgotten the important questions. To be effective, we should approach each class with the nervous anxiety of a first-day kindergartener. Perhaps the comparison is overdrawn. To be comfortable is not necessarily to be complacent, yet a part of us should always be on edge, wondering what new stimulus from which student will ruffle our hard-earned poise.

An agonizing step for many teachers, other than facing the principal for evaluations, is to throw away those tried and true lesson plans that **always** work — the ones they can count on for "perfect" days — but that is sometimes the very healthiest thing to do. At that point, teaching becomes what learning should always be: an adventure, not an exercise. At the moment we discard our security blankets, we are willing to become as vulnerable as our students, who **never** know in advance what we will be throwing their way. When we burn our bridges, the worst that can happen is that we finally learn to swim — or drown.

"The trouble with the rat race is that even if you win, you're still a rat." (Lily Tomlin)

A word about rushing madly to keep up with the curriculum guide, or preparing feverishly for standardized test day, or keeping up with the social studies teacher across the hall: If we are determined to rush madly, let us know that for which we are rushing. Is it education, or mere performance? Please do not misunderstand. As a music teacher, I know that performance can provide exhilarating education, if it draws out new dimensions of a student's selfhood; but performance on tests can easily degenerate into high-tension obsession with impressing people — school boards, taxpayers, fellow teachers, or administrators. Preparing for tests, taking tests, and evaluating results are parts of our school fabric, but to sacrifice a balanced view of the process is a mistake.

When teachers become frantic with nerves and students get bug-eyed with fear on test days, it is time to shift the perspective. Paradoxically, as society speeds up, education seems to need to slow down, to reduce the pressure, and to rediscover the reveries of the mind. Courage, humor, persistence, creativity, questioning, kindness: these qualities cannot be rushed or tested into obedience. Do not give in to shallow, superficial demands on your "teacherdom." Let the mind, not the clock, have its rightful domain.

"Try not to become a man of success, but rather try to become a man of values." (Albert Einstein)

"Yesterday I was a dog. Today I am a dog. Tomorrow I'll be a dog. There's so little hope for advancement." (Snoopy)

Your most profound successes, your most sublime moments in the classroom, will usually be known only to you and the one student they bless. The "Ah-ha!" experiences, the giant leaps forward, the tender leaps sideways, remain mostly anonymous in a resume kind of context; but never forget: Those are the moments which change young people's lives — and yours. Twenty years later, Eddie Joe may write to say how you gave him the courage to be a better student or the will to be a better person. If you chafe under the strain of low salary or questionable prestige, remember the possibilities of your work, and weep for joy!

"Humanity is acquiring the right technology for all the wrong reasons." (Buckminster Fuller)

"Progress might have been all right once, but it's gone on too long." (Ogden Nash)

"The danger of the past was that men became slaves. The danger of the future is that men may become robots." (Eric Fromm)

"Many creatures have brains. Man alone has mind." (Buckminster Fuller)

As we face the end of the twentieth century with quaking knees and shaky expectations, the infusion of technology in our lives, for good or ill, is a given. No matter how many buttons we push or programs we run during the course of our days, let us remember that Eddie Joe is not buttons and programs. He is not machinery to be bent to the will of expediency. If we allow ourselves to be pushed by the shifting cosmetics of life around us, we will sacrifice basic, organic needs for technical ones.

We, as teachers, minister to children's minds, not just their brains. We serve the whole being, with all its wishes and warts. We can **use** our times, rather than **be** used by them. If Chicken Little screamed, "The sky is falling! The sky is falling!" we must not echo with, "The computer's coming! The computer's coming!" Machines can be simply and thoughtlessly turned on and off. Children should not be. They need touching, healing, laughing, loving, prodding, nagging, playing, and calming, in various forms on various days. Eddie Joe will not mind if you fail to teach him a particular portion of word processing, but we will not forgive you if you fail to notice who he is.

Actually, too much expounding and explanation miss the whole point of the Curmudgeon's Guide to the Classroom. Go ahead and take these last few pearls of wisdom in your own way. They are excerpted from **The Wit's Dictionary,** compiled by Colin Bowles. Filter them through your own philosophy and your own sense of humor. Connect them to yourself, a teacher, an administrator, a student or a situation; and if you seriously doubt their veracity, devise a credible research project to figure it all out!

Confidence is the cocky feeling you get before you collide with reality. (anon.)

Conformity: something you can practice without making a spectacle of yourself. (anon.)

Expert: an ordinary guy 50 kilometers from home. (anon.)

Fad: something that goes in one era and out the other. (anon.)

Frustration: when you have ulcers but still aren't successful. (anon.)

Ignoramus: someone who doesn't know something you learned yesterday. (anon.)

Pessimist: a man who, when he smells flowers, looks around for the coffin. (H.L. Mencken)

Television: a medium which allows millions of people to listen to the same joke at the same time and still be lonely. (T.S. Eliot)

Artistic temperament: a disease that afflicts amateurs. (G.K. Chesterson)

Egotism is the anesthetic that dulls the pain of stupidity. (Frank Leahy)

Civilization is a race between education and catastrophe. (anon.)

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DEVELOPING CHILDREN'S CREATIVITY

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Typical definitions of creativity do not apply to creativity in children. We need a broader conception — a developmental framework that encompasses a range of creative behavior from infancy to adulthood. From this perspective, we can bridge the gap between the universal constructions of novelty found in all infants and the highest levels of creativity, in which a field is revolutionized. Creativity then becomes involved in all new learning, just as novelty must be constructed by the individual.

By taking this developmental view, both the pinpointing of the stage in which a child is functioning and the direction for instruction are provided; however, two areas in particular need work. The first is determining the stages of development in nonuniversal domains so that a child's talents can be fully enhanced and appropriate instruction offered. The second is the operationalizing of each level of the continuum in the form of a checklist that could be used to identify children at risk for low levels of creativity and those especially at promise, both of whom need special support.

THINKING AND CREATIVITY: STRATEGIES FOR THE CLASSROOM

Thinking—how humans exercise intelligence and adapt to their world—is the mechanism for creating. Teaching *for* thinking by setting an appropriate climate, *of* thinking by promoting specific strategies, and *about* thinking by studying thinkers, the brain, and metacognitive processes is parallel to teaching *for*, *of*, and *about* creativity.

I suggest mode shifting from one representational form to another as a thinking strategy. Two aspects are particularly significant here. The first is the importance of integrated learning. Educators work with *whole* children, not just their cognitive abilities, and not just in limited areas such as spelling or arithmetic. Teachers must see the child as having evolving systems of affect and purpose, as utilizing the physical and perceptual systems, as well as cognition. When the teacher supports the development of the whole child, the greatest possibility for creativity, thinking, and interest growth occurs.

The second aspect is utilizing mode shifting as a teaching strategy. Use of metaphor as a teaching strategy is not new; however, teaching children to utilize imagery, symbolic thought, and physical action, in addition to verbal modes and teaching them to select the language of thought most appropriate for each individual's needs, are ideas worth considering and consistent with current notions about processing information.

For Thinking and Creativity: Setting the Climate

The climate for thinking and creativity is critical, if we are to engender thoughtful and creative behaviors.

A trainer once used seventeen sardines to get a porpoise to recognize that creative behavior was being rewarded. Once the porpoise caught on, the number of novel behaviors was so dramatically increased that they could no longer be tallied, as the subtleties could only be recognized by another porpoise (Pryor, Haag, and O'Reilly 1969). Imagine what would happen if we apply this analogy to the classroom by rewarding creative behavior and inviting and supporting its development.

To support creative behaviors, teachers can allow for greater student empowerment and self-direction in their educations by letting children choose topics for study, times to do it, and ways of sharing products. Teachers can model creative behaviors by being curious and questioning events in the world around them with the children ("This didn't work. I wonder if it's salt or how long the eggs boiled that makes eggs sink?"), or sharing examples of their own creative products (bring in a story, painting, and so forth). Teachers can ask open-ended questions and support many different paths to an end point. As shown in figure 1, for example, ideas for a report on frogs and toads could be webbed, and the teacher could raise questions as to where ideas suggested by children might be listed, helping the students recognize that these ideas could fit in several places. For example, "amphibian" fits with "frogs" and with "life cycle." Other ideas could be multiply classified, as well.

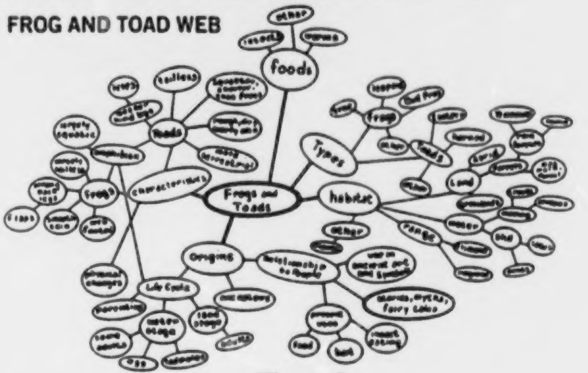
FROG AND TOAD WEB

Figure 1

Early School Experiences

Teachers of the early grades hold the key to the child's school self-concept, future school achievement, and confidence to be creative. Bright, eager preschoolers enter kindergarten and determine their self-concept for school success in their early encounters with school. They need an inviting environment; caring, loving teachers they can trust; and a curriculum that recognizes their interests and learning styles so that they can decide that they do fit in the school setting. We know that underachievement and later at-risk behavior results from the lack of such early support. Oregon's superintendent of instruction, Verne Duncan (Oregon Department of Education 1987), recognizes these facts and has made early childhood education his top priority. Children with a positive self-concept who are autonomous are more likely to be creative.

We also need to begin to support creative development much earlier by helping parents to recognize the importance of their children's play, answer their children's questions, provide appropriate activities, and develop autonomy. Piaget (1981) describes early childhood as "the most creative period in life until society deforms it." This may happen through subjugating the child's autonomy to the will of overly authoritative parents or through a school setting where the child's creativity is suppressed through overemphasis on obedience, conformity, right answers, and drill.

Messing Around

"Messing around" with objects or ideas is a necessary step in the creative process. We know that when a child gets a new toy, for example, she must go through an exploratory phase, learning what the toy can do in short, "messing around" with it. Only when she finally grasps the possibilities can the toy be genuinely played with, that is, transformed or used freely at the will of the child and to her own ends.

We cannot expect a child given a microscope for the first time to immediately produce a drawing of onion skin cells from a slide. The child must have time to "mess around" (within the limits of safety of both child and machine, of course), to learn what a microscope can do before he can use it effectively.

In fact, "messing around," this exploratory aspect, is seen at the base of all creative thought—the curiosity in novelty, the finding of facts, the becoming interested prior to engagement in an interest. "Messing around" and true play are essential to creativity, thought and interest development. Play is the work

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of childhood. We need to support and recognize more playful aspects in the classroom. Humor helps. So does a structuring of experiences that provides time and recognizes that "messing around" may be extremely important for later high levels of growth. Sternberg (1982) found, for example, that the best problem-solvers take more time "encoding," tying in elements of the problem to everything they know, before beginning to work on the problems. "Messing around" is encoding time.

Determining Interests and Themes

The demonstration of talent is bound up with the interests and purposes of the child. To facilitate these areas, the teacher first needs to find out what the child's interests and abilities are. One possibility is to offer exposure to a variety of ideas that may engage the child. Another is to find out how the children's interests have evolved. The teacher could ask the children (as a homework assignment to do with parents) to use 3x5 cards or Post-it notes to list their present interests (one per card), capturing some detail about the activities related to each interest, and dating the cards. The children could then be asked to think about what they were interested in a year ago, two years ago, and so forth, laying these in rows below the first row, as suggested in figure 2. They might be asked to see if any interests relate to others horizontally or vertically.

Vertical stackings in this interest retrospective relate to themes, enduring motifs that structure the interest based on deep questions the child is trying to answer. At this point the teacher can begin to see patterns of interests and may be able to offer exposure to a new but related area that fits the child's pattern of themes and interests, or the child may suggest an area to explore.

Interest Retrospective

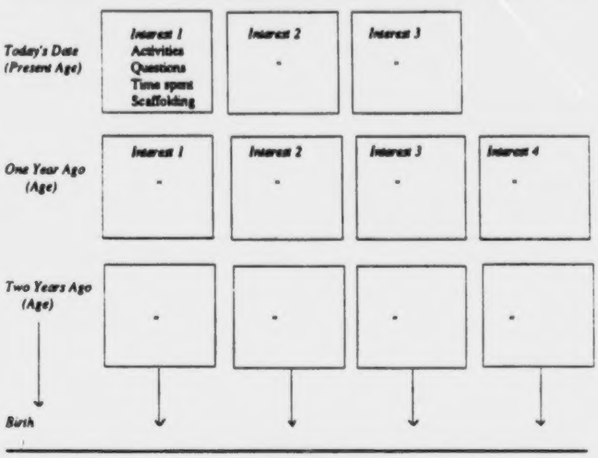

Figure 2

Teaching to Interests

The teacher may need to become a resource gatherer, finding people, materials, or places that can facilitate the child's evolving abilities and interests. For example, a kindergartener, very excited about musical instruments, shares his record, "A Child's Guide to the Orchestra." The teacher invites her friend, a French horn player, to come to class, finds other records, and takes the children to a tot's concert. This benefits not only the interested child, but opens doors for other children in the class to become interested as well.

Teachers of young children should tune in to the child's play. The interests of the young child are very important and represent the child's attempts to regulate the self and gain an equilibrium by answering important questions. Young children should be exposed to many experiences that may open new doors to interest involvement. The more themes that are involved, the more likely the child will enter a long-term engagement in a new interest. Loving adults should support the child's direct requests for help. "Can you help me tear off the Scotch tape?" or "Please help me make jerked venison."

The child's interests can be extended by getting books about a topic of involvement from the library, offering a simple motor for Lego materials, or showing a child how to make a "wax resist" of crayon and watercolors. Finally, the involvements can be observed and the deep questions figured out, with an offer of a question, a book, or an extension to a new interest at the right moment.

It is important for the adult to allow the child to satisfy his own question. Wait until the activity is waning before offering an extension. The important thing is not to impose on the work of the child as he answers his own quest. Too often the parent or teacher is worried about the child naming letters, making numbers, or performing other recognized school skills to ensure school success. The very important studies made by the child in explorations of interests are ignored, and the child soon learns to give up these pursuits for adult-approved learning.

Tuning in to Personal Agendas

Preschool teachers especially must tune in to the child with a personal agenda. I observed one group of toddlers playing with several child-development students and a teacher who were dangling a large parachute and several small toys above them. The little ones were enjoying the feeling of the silk on their faces and were jumping to touch the toys; but one little boy of about twenty months had his own question. Off by himself in one corner of the room, he was dropping a yellow plastic bowling pin behind the wide wooden bar that protected the window wall. He studied how it fell, picked it up, and did it again and again. I could not tell whether it was the vertical blinds that were changing the trajectory of the object from what he anticipated or whether it was simply that the object reappeared each time he dropped it behind a barrier, but he was totally involved in this problem for over ten minutes, and no adult tuned in to his question. At least he was not dragged away to become part of the parachute group. An aware teacher could have let him almost finish and then offered him a different object such as a ball or a block with which to continue his experiment; or he could have been offered a different barrier, such as dropping the object into a large box or behind a fabric curtain, thereby supporting his answer to an important question.

Classroom teachers could use the retrospective technique (Cohen 1987a) in parent interviews to further interest development and to understand the themes of the individual children. We know that children learn quickly when interested in something; they have exceptional cognitive power for learning, retaining, and using the knowledge and information (DeVries 1978, Duckworth 1981, Whitmore 1987).

In fact, when children can be in control and are allowed to pursue interests, underachievement may be less of a problem. Whitmore (personal conversation, April 11, 1987) believes that interests may be less observable in older underachieving children because they have not been supported, leading to both loss of interests and underachievement. It may be that some children are more vulnerable than others (Horowitz and O'Brien 1985) to erosion of interests, while other underachievers persist in pursuing a profound, consuming interest and ignore the other school "stuff" they consider trivial.

Child as Craftsman

Feldman (1982) suggests that children be thought of as craftsmen honing skills in a particular field. The teacher should become aware of the levels of learning in a field to support more advanced development or find a mentor or other resource person with considerable background to help the child. The teacher can allow children to pursue their interests and share them with their peers. Sometimes, time is what is needed. For instance, the gifted musician might need to be freed from other requirements to get an hour of practicing or ensemble time during school hours.

Teaching to Themes

Teachers could teach to themes, some with the whole class, perhaps as thematic units, others for individual children. For example, if a child has a putting-it-all-together theme, he might especially enjoy geography, music, geometric puzzles, or attribute games, learning about the boundaries (biggest, smallest, oldest, tallest, loudest, or softest). Such a child might relish techniques such as mind mapping, webbing, finding associations or relationships, using reflective abstraction, putting into relationship, or synthesizing (Cohen 1986, 1987f).

For children with a power variation on the control theme, rocketry, aviation, and volcanoes are naturals. Such children (or all those with a control theme) would enjoy fantasizing about the magical power they would most want in a story they write. Those children with a getting-attention theme might have a part in a play or put on a class talent show. Children with a control/independence theme would particularly need a class climate where they can feel in charge of their learning experiences. In [illegible], as the control theme is central to all the bright children studied, a classroom for the gifted must support autonomous development, the chance to control the self and the environment. It would certainly benefit all children. Thus, Betts' (1985) Autonomous Learner Model is especially appropriate, as are open classroom and facilitative teacher models (Cohen and Hackman 1979).

Children with a nature-nurture theme could be in charge of plant or pet care. They might make a terrarium, write a story about an animal, help in the special education classroom, or be a special friend to a new child in the class. Children with people/relationships themes might also do these last two activities, as well as write about an interesting person they have known, look at different ways people (or animals) communicate, or conduct a survey on moral issues or how to be a friend.

Those youngsters with aesthetic/expressive themes would enjoy "sharing time," creative dramatics, art and music activities, or creative writing. The aesthetic and sensory sides of all children should be developed, helping them to observe and appreciate the wonder around them. Going for a magical mystery walk where each child tries to find something wonderful or new to share with the class could appeal here. Children could look for signs of spring, aesthetics of form in function (designs of street lighting or manhole covers, for example), life underground, Victorian architecture, or simply something they think no one else has noticed.

Children with cognitive-skill-acquisition themes surprisingly may not be the teacher's dream, especially if they come to school with abilities far above their classmates. It is critical that such children be allowed to pursue these skill areas at their levels of ability and with their own pacing to maintain the interest. Sometimes a mentor or resource person may be needed to help such a child. One boy in my study of gifted young children had extraordinary math skills going into first grade (he knew all the squares of numbers up to 450 and the cubes up to 150, had figured out all manner of number patterns, and could multiply in his head three-digit by three-digit numbers as fast as his calculator). This child spent hours each day on mathematics and computing. Clearly, any first-grade teacher would need help with such a child.

A final suggestion for older children is that they study their own interest patterns. One of my graduate students had her class of fifth-grade children do a retrospective study on themselves with the aid of their parents, using baby books, photographs, and artifacts, with a classmate helping them reconstruct memory. Children could ask themselves "What are my BIG questions?," beginning to develop metacognitive awareness as well as thinking about their interests and themes. They could look for theme intersections and try to display their themes and interest patterns in an image. Such a technique might be useful in considering career directions as well.

Encouraging a Sense of Purpose

Teachers can support long-term, purposeful involvement in their students, as creativity requires commitment and purpose. The seven-year-old girl who is crazy about horses, for example, can read about them, draw them, learn about their history, breeds, and training. Instead of basal reading, she could do a research report on horses with help from the teacher or librarian. It is the consuming passion for a subject and the willingness to wrestle with difficulties that marks the creative person. The same little girl may try to change the perspective in drawing horses from side views to front views by attemping dozens of drawings, for example. Such passion also greatly enhances true learning. The reading skills develop because there is a purpose for reading, as the child in our example must find out everything she can about horses.

Above all, it is important to consider the child's purposes seriously and to support and encourage intense commitment. One very gifted young writer in my fifth-grade class used to spend thirty to forty hours per week on her writing assignments. At times, she would come to school tired and be less than interested in math or social studies, but how marvelously she wrote! I wish that I could write now, in my forties, as this little girl wrote at ten! (See Cohen and Kamihira.)

Stimulating Thinking: A Few Simple Things

To improve the quality of students' thinking, teachers can do a few simple things: When asking questions, allow sufficient wait time (5-10 seconds is a start) for students to think, so they do not feel pressured into hasty or sloppy thinking; follow up on student responses, asking students to clarify, provide evidence, elaborate, or state how they got the idea; have students ask questions, and plan for this type of activity in the classroom.

Ask questions that elicit higher levels of thought. Questions that begin with "what," "where," or "when" do not move beyond recall of facts. Ask more "why" and "how" questions. In order for the child to be expansive in his answer, the question must provide the clue. For example, instead of asking a group of first graders, "How can you tell it is spring?" the question should be phrased, "Think of all the ways you can tell it is spring." This asks the child to be exhaustive.

Help children look for clue words in questions. For example, words like "most," "best," or "in your opinion" ask a child to evaluate information. I have found that teaching children in upper elementary grades the types of questions that can be asked improves their ability to take tests, particularly with essay questions. I teach them fact questions, inference questions, convergent questions, divergent questions, and evaluative questions, each with an example of what might be on a test in a subject area we are studying. Giving extra credit on a test for correctly identifying the type of question asked helps the child know the type of answer to provide.

Recognizing Different Strengths

Finally, teachers can recognize and support the development of different strengths in their classes—the special areas in which each child excels. By finding the gifts in every child in the classroom, all children benefit in development of potential for creativity. Setting the climate for creativity and thinking is probably *the* most important step schools can take to ensure movement up the creativity continuum.

Of Thinking and Creativity: Resources for the Development of Creativity, Interests, and Thinking

Of thinking and creativity refers to the "how to's," the techniques and heuristics for solving problems or dealing with information.

Creativity Training Programs

Several major creativity training programs deal with specific skills or steps in developing creativity. According to Mansfield, Busse, and Krepelka (1978), the most commonly used programs are as follows:

1. *Productive Thinking Program* (Covington and others 1972). The training consists of programmed instruction for solving largely convergent problems for upper elementary pupils, based on a self-instruction model.

2. *Purdue Creative Thinking Program* (Feldhusen and others 1971). This program fosters divergent thinking abilities—verbal and figural fluency, flexibility, and elaboration as well as problem solving for elementary pupils. It consists of twenty-eight audio tapes along with printed exercises.

3. *Creative Problem Solving Program* (CPS) (Parnes 1972). Perhaps the most successful, this program deals with older students who have developed sufficient competencies to consider possibilities systematically in a step-by-step approach to solving problems. This model might be especially useful at a particular mode in the creative process where the creator is frustrated and needs a systematic procedure to help clarify the problem. CPS is the model used in future problem solving. Training in the basic process of CPS is available through the Creative Education Foundation, which sponsors the Creative Problem Solving Institute in Buffalo and at the Epcot Center, Florida.

4. *Myers-Torrance Workbooks* (1964, 1965, 1966a, 1966b, 1968). Stimulating the imagination and inducing originality in fun-type, open-ended questions are the objectives of this resource.

5. *Khatena's Training Program* (1970, 1971a, 1971b, 1973). This training program involves breaking away from the obvious and commonplace, transposition, analogy, restructuring, synthesis, and the active use of imaging and imagination.

An additional training program is DeBono's (1976, 1985) CoRT program to enhance lateral thinking. It assists the individual in seeing patterns, finding alternatives, dealing with perceptions, and transferring ideas to other areas.

Any of these programs is more likely to lead to level 5 (being producers) along the creativity continuum, rather than levels 6 or 7 (mature creativity); however, developing systematic approaches to deal with problems (see particularly Parnes), learning how to break away from the obvious (see Khatena), and developing a climate that supports divergence are all likely to be supportive of later creative development.

Use of S.C.A.M.P.E.R. (Eberle 1977), in which the child learns to apply a checklist of verbs to help change one's mental set, such as substitute, combine, adapt, magnify, minify, modify, put to other uses, eliminate, and reverse or rearrange, helps develop ideational fluency and flexibility as well as associational ability. Idea-stimulating techniques described by Parnes (1977) and Feldhusen and Treffinger (1980) are also useful, particularly for solving problems. These techniques include forced relationships in which a problem statement is presented and a list of unrelated objects offered, each of which must be "fit" to the problem; catalog techniques in which the list (as above) of objects is randomly drawn from a catalog; focused relationships, similar to the above, but more directly related to the problem at hand; and arbitrarily forced relationships, in which no problem is stated, but two objects are selected randomly and forced together, sometimes known as the "fish bowl" technique.

Another approach is "Synectics," proposed by Gordon (1961, 1971) and Prince (1977). Synectics uses analogy and metaphor to help users find relationships between things to make the strange familiar and the familiar strange. It is the joining or associating together of apparently different and seemingly irrelevant objects. This approach can be very helpful in encouraging the relating of new information to what the child already knows.

Imagination and Imagery

Developing imagination and imagery is another useful technique for enhancing creativity. For example, guided imagery can stimulate writing skills. Having children relax, close their eyes, and go on a mind journey to the words suggested by the teacher is a good way to stimulate alpha rhythms in the brain associated with creative acts and to bring to consciousness ideas connected to the writing theme. For example, if the teacher wanted the children to write poems about spring, she might ask questions about what they see, smell, hear, and feel on their imaginary journey into a spring day.

Simply asking students to close their eyes and think helps in "centering," getting into one's mind and ideas without the distractions of the outside world. Asking senior-high students to think about the process of mitosis, for example, by closing their eyes and "seeing" or imaging it, will likely produce better explanations on a test.

Use of images or metaphors to tie together large amounts of information in a shorthand form has been described by Gruber (1977). In fact, highly creative people use "images of wide scope" that act as a gestalt and serve as a base on which to hang details, allowing the creator to gain objectivity and communicate difficult material in simple form. Darwin, for example, used the image of an irregularly branching tree of nature to help him conceptualize *The Origin of Species*. Teachers could have students read a chapter in history or biology, for example, and create a single page image (figural, symbolic, or semantic, or a combination thereof) to tie together the information.

Students could also keep a log of how they got the ideas (what other aspects of their mind-map got pulled into making the metaphors and connections) as well as what the various symbols represent. By sharing these images and reflections with peers, they develop awareness of others' perceptions of the same topic.

Mode Switching

Using mode switching strategies is another technique. In addition to images, students could represent verbal material with symbols or with psychomotor actions. To represent the process of phagocytosis, for example, a group of students could be asked to physically enact how the white cells engulf the bacteria. Alternately, if material is presented in a different mode (image, physical, behavioral, or symbolic) they could use verbal modes for processing it.

About Thinking and Creativity: Metacognitive Strategies

In learning *about* thinking and creativity, the child studies creative and thoughtful people, how the brain works, and metacognition.

Studying Creators

Children can read biographies and autobiographies about famous creators, inventors, and discoverers: Thomas Edison, Benjamin Franklin, Louis Pasteur, Marie Curie, George Washington Carver, Leonardo Da Vinci, and Michaelangelo, for starters. They can also study living creative people like a teacher, writer, or one another doing creative things. For example, they might study how students got ideas from the Torrance Figural Test of Creative Thinking, item 1. This is either a bean- or egg-shaped piece of sticky paper to be stuck to a page and integrated into an original, elaborate drawing and then titled. The teacher might raise questions (for example: "I wonder if first graders would do it the way you do?") that could trigger ideas for future study.

How the Mind Works

Students can discover the ways their brains work. Children might be asked to draw pictures of how their minds work, perhaps as a kickoff to studying the brain. This activity should be focused on creative ideas, not realistic drawings. The various conceptions could be shared and compared as to how the mind was viewed over history. Sylwester's (1978) hand analogy is a useful way of describing the brain. The child makes two fists and lays them together, fingernails matching. Each part of the brain can then be made analogous to a location on the hands.

Asking children to watch one another's eyes move while they are solving a math problem allows them to look for hemispheric activity. As the eye is worked by the opposite brain hemisphere, if the child is looking to the right, the left hemisphere is engaged; to the left, the right hemisphere; and in the middle, both. It is easier if observers simply indicate whether the eyes are to their own right or own left as they face their partner. The children could design some interesting experiments related to this saccadic eye movement and hemispheric activity. For example, in solving math computation problems, which hemisphere is used? In solving math story problems, what happens? What would their hypothesis be prior to testing and why?

The teacher also might ask the students to be aware of their best creative thinking environment. Students could be assigned to think about a problem lying in a darkened room. Do they think best lying on their left side, right side, or flat on their backs. With Bach, rock 'n' roll, or silence?

Metacognition Strategies

Metacognition means an awareness of one's mental activity. It can be developed through the imaging activity or tracing the patterns of one's interests. Keeping a journal of one's connections or using an interactive journal is another technique. The latter can be used at any grade level. It might occupy the last ten minutes of a social studies class or the end of the school day. Students could be asked to react to the lesson or day and to discuss what they learned and how they felt. These responses are collected, read by the teacher, and commented on (positively) in a sentence or two. No corrections are made, just a dialogue stimulated to get ideas shared. The tone in the class will be more conducive to creativity, and the students will begin to become aware of their mental processes.

In a notetaking technique useful for promoting metacognition, a piece of paper is divided with a wide left margin about one-third of the page across. On the right, notes are taken in class or from books. On the left, connections, questions, and personal ideas are jotted; this represents the inner dialogue. When papers are written from such notes, the metacognitive aspects play a key role, supporting creative connections. Another technique is to use three different colors of ink when taking notes. Blue is from lecture or text, red is for reflections and personal thoughts about the topic, and green is to highlight important items to return to and think about more.

Older students could study something new they always wanted to learn, such as skiing, French cooking, or calligraphy, perhaps for an English or psychology class. The term project is to keep a metacognitive journal of their development in that subject (Feldman 1980), paying particular attention to stages, transitions, and events that helped them move to higher levels.

Perkins (1981) suggests "Thinking Aloud" techniques to study one's creative processes as they happen. He finds that having people be introspective and report on their thoughts during or immediately following episodes of invention does not seriously disrupt the creative process. Students should be paired for this activity, the "researcher" sitting unobtrusively to one side of the "creator," taking notes, and prompting on principles 2, 3, and 5 (below), particularly 2 — "What are you thinking now?" — if the creator does not talk. To begin, try using an art activity rather than a verbal one. Tape recorders or video cameras might be useful tools, too. Students can then switch roles. The six principles to promote a complete record are:

1. Say whatever is on your mind. Don't hold back hunches, guesses, wild ideas, images, intentions.
2. Speak as continuously as possible. Say something at least once every five seconds, even if only "I'm drawing a blank."
3. Speak audibly. Watch out for your voice dropping as you become involved.

To discourage overexplanation:

4. Speak as telegraphically as you please. Don't worry about complete sentences or eloquence.
5. Don't overexplain or justify. Analyze no more than you would normally.
6. Don't elaborate past events. Get into the pattern of saying what you are thinking now, not of thinking for a while and then describing your thoughts (Perkins 1981).

Discussing how students arrive at certain ideas or answers stimulates metacognitive awareness as well as the notion that there is no single right way to think creatively. For example, the teacher could ask students how they came up with ideas for making masks, solving a math problem, or writing a story. "How did you get started?" "Did you think of a lot of ideas first and then select the best; or did you get an immediate flash of an idea and begin to work?" "Did you plan and outline it?" The teacher could also stop the class after presenting some information and ask the students, "What are you thinking about right now?" encouraging the tying in of new material to familiar notions. As the child is listening to or reading information, there should be a mental dialogue going on in his or her mind in which the new is related to the familiar.

Paired problem solving, suggested by Whimby and Lochhead (1982), would be another strategy to consider for this activity. One student takes the role of listener-receiver; the other the thinker-doer. The listener responds to the thinker by asking questions or eliciting information. The thinker shares his or her thought processes, perhaps writing down ideas. Then, roles are reversed. It is important for children to realize that we each approach a creative activity differently and that there is no single right way to write a story or to do an art project.

CONCLUSION

Very little research has been done on the interests of childhood, except on toy preferences. Because interests are central to a child's self-regulation—to the resolution of big questions deep within the systems—educators must recognize their importance. By understanding how interests are structured and recognizing the major themes of childhood, the curriculum can be focused on these areas, reaching children in significant ways. Interests and themes are the seeds of mature creative development (the interests being the content and the themes related to the purposes). Hence, we must support their development if we are to assist children in reaching the highest levels of creativity.

A re-examination of play, interest development, self-regulation, and autonomy in early creative development is needed. Policy implications for interdisciplinarity, especially at the secondary level, should also be considered. If we want Renaissance men and women, revolutionary creators with great breadth of vision in addition to those who can create by extension within their own fields, we must tune in to the development of varied interests through the play of childhood so that ideas from one area can fertilize others. We must provide opportunities in the classroom for a variety of interests to emerge and for creative development to occur.

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A MODEL FOR INTEGRATING THINKING AND PROCESS SKILLS INTO THE REGULAR CURRICULUM THROUGH GIFTED EDUCATION

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Introduction

Recently, there has been a significant increase of interest in the infusion of thinking skills into the regular school curriculum (Costa, 1985; Resnick & Klopfer, 1989). Numerous publications have appeared that stress the need for educators to explore ways in which traditional skills taught in the regular classroom can move from an emphasis on lower-level basics to an emphasis on thinking skills and processes.

Paralleling the concern for an appropriate model to incorporate thinking skills into the regular curriculum, has been a recent concern for the future role of gifted education programs and their impact on the regular classroom. Tannenbaum (1983) expressed a need for programs designed for the gifted to be seen as vital components in a total school curriculum. Otherwise, programs for the gifted run the risk of expendability when funding constraints necessitate programmatic reductions.

Another concern held by many educators of the gifted has been that of making appropriate links between the regular classroom, where the gifted child spends most of his time, and the special class or resource room which is designed to meet his specific educational needs. Major emphasis in gifted education over the past decade has been on the development of process, or thinking skills. In particular, special emphasis has been placed on critical and creative thinking, higher-level thinking processes, and finding and solving problems. While gifted children desperately need to have these skills emphasized, these are skills we, as educators, would like for *all* children.

The model proposed here is designed to provide a confluence of the current emphasis on thinking skills instruction and the current work in gifted education of providing a more appropriate educational experience for all children. The proposed model takes into consideration the fact that most teachers of the gifted will have spent considerable time in developing curricula which emphasize thinking skills. This is due, in part, to the nature of instruction in gifted education courses and workshops. This model purposes to utilize the single best resource currently available for infusing thinking skills into the regular program: the trained teacher of the gifted.

In no way does this model suggest the dismantling of gifted programs. There is still a strong need for programs for the gifted to be supported, expanded, and encouraged within schools. Instead, this model takes cognizance of the fact that the teacher who is currently working with, and developing curricula for, gifted students is a valuable resource, to be utilized in helping the regular classroom teacher incorporate thinking or process skills into his curriculum. This model emphasizes that the role of the gifted teacher should be expanded. In fact, one school corporation considering implementation of this model has used the term Talent Development Coordinator, instead of the potentially troublesome term "gifted teacher." The advantage of such a term is that the emphasis shifts from an abstract, impersonal concept, "program," to a broader conception of the role of the teacher or coordinator. The implications then arise that funds which are being used to meet the needs of gifted students can provide impetus toward the improvement of the gular curriculum as well. This point is valid when budgetary considerations become a major issue.

Proposed Model

This model has several prerequisites for its implementation. First, of course, is a properly trained teacher of the gifted. With the recent interest in appropriate education of the gifted, this is no longer a meager commodity. Ideally, this individual has had specific coursework in gifted education and may hold either advanced degrees or some form of certification for gifted education. Minimally, this individual should have had training in the development of appropriate curriculum materials for the gifted. It would be advantageous if there were several such well trained individuals at various grade levels, K-12. In addition to workshop participation and course work, this person should have had experience in the actual development and use of curricular units for the gifted. It would be helpful if the teacher were prepared to assist in the development of comprehensive scope and sequence charts for the inclusion of process skills into the regular curriculum.

A second prerequisite is an appropriate match between the regular classroom teacher and teacher of the gifted. A good match is one in which the regular classroom teacher and the gifted teacher both see the need for upgrading the existing curriculum and are willing to invest the time and effort necessary to make the endeavor successful. This may necessitate that initial efforts be limited to partial implementation of the model. Identification and support of individuals interested in developing these cooperative efforts are crucial.

The third prerequisite, and the one which may encounter the greatest resistance, is that of providing the time and resources necessary for curriculum development. Several strategies can be employed for meeting this requirement. One strategy is to provide time during the academic day in which the regular classroom teacher and the gifted teacher could work solely on the development of curricular materials. A second strategy is to reimburse teachers for time spent either before or after school on curricular products. A third strategy is to have them work together during the summer months. There is a distinct advantage in combining several of these strategies. Work during the academic year (strategy one or two) could be used as preparation for summer curricular writing. The time could be spent in pre-development activities such as a survey of existing curricular materials and articles emphasizing thinking skills, as well as providing the regular classroom teacher with examples of how curriculum should be developed to emphasize thinking processes. Essentially, this pre-development stage is designed to provide the base-line knowledge necessary for the actual curricular writing.

Pre-Development Stages

The model works through two distinct stages. As mentioned above, the first stage is that of pre-development. In this stage the emphasis is on cooperative knowledge development between the gifted education teacher and the regular classroom teacher. Responsibility at the first stage rests with the teacher of the gifted to provide his counterpart with sufficient information as to what process, or thinking skills, are as well as **how** to write curricula/units which incorporate process or thinking skills content.

While numerous taxonomies exist which list thinking skills, several are basic and should be strongly emphasized. Teachers of the gifted have effectively utilized these lists of skills to develop curricula for students. At this stage, gifted teachers should be able to provide resource materials as well as practical knowledge for their regular-classroom counterparts.

Critical Thinking

One major goal of most thinking-skills programs is the development of critical thinking abilities. A great many resources are available that can be used to develop critical thinking and have been utilized for some time in gifted programs. Examples of these materials are the Harnadek or Midwest Publications materials on critical and logical thinking.

While these published materials have been useful initially in developing critical thinking skills, recent emphasis has shifted away from such "canned" programs to the development of materials based on the definitions or elements of critical thinking. Ennis' (1985) listing provides an excellent outline of the essential critical thinking components:

A. Elementary Clarification
    1. Focusing on a question
    2. Analyzing arguments
    3. Asking and answering questions of clarification and challenge
B. Basic Support
    1. Judging the credibility of a source
    2. Observing and judging observation reports
C. Inference
    1. Deducing and judging deductions
    2. Inducing and judging inductions
    3. Making and judging value judgments
D. Advanced Clarification
    1. Defining terms and judging definitions
    2. Identifying assumptions
E. Strategy and Tactics
    1. Deciding on an action
    2. Interacting with others

Each of these components is further broken down in Ennis' strategy to provide a detailed framework for the development of critical thinking skills.

The above listing can provide an organizational knowledge base for understanding the components of the thinking or process skills, and a basis for elements in a scope-and-sequence curriculum development chart.

Creative Thinking

Unquestionably, the greatest curriculum emphasis in the past ten to fifteen years in gifted education has been within the creative thinking domain. Experience also has shown that this tends to be the thinking process which is least emphasized in the regular classroom. This lack has become most evident during the student identification process when regular classroom teachers are asked to rate students on their creative characteristics. Rating creativity is often difficult for teachers to do, since relatively little time in the regular classroom is devoted to this domain.

Teachers of the gifted can provide guidance for the regular classroom teacher in developing creativity in students. Numerous strategies and techniques, to say nothing of the vast number of materials, are available to assist the classroom teacher. Feldhusen and Treffinger (1985) provide a rationale for creativity development as well as strategies and resources. Strategies discussed include brainstorming, attribute listing, morphological analysis, synectics, forced relationships, and the creative problem-solving model. In addition, such programs as

Future Problem Solving and Odyssey of the Mind can be absorbing, challenging, and stimulating experiences.

The creative thinking domain will most likely be the area where the gifted teacher can assist the regular classroom teacher in instruction adaptation. The Purdue Three-Stage Model (Feldhusen and Kolloff, 1986) provides an excellent framework in which creativity and content areas such as science can be merged (Hoover, 1989).

Higher-Level Thinking Skills

This category tends to be a broad name for what educators have come to think of as the "upper" levels of Bloom's taxonomy of educational objectives. Along with the creativity dimension, higher-level thinking skills have been used extensively in the development of curricula for the gifted. Strategies for matching the thinking skills to the content areas have been elaborate and tend to operate through the use of objectives and activities. In particular, Treffinger, et al. (1979) have developed a handbook for designing instruction which emphasizes the levels of Bloom's taxonomy. Teachers of the gifted generally have been well trained in the appropriate use of the taxonomy for providing challenging materials as well as classroom questions and discussions.

Problem Solving

Recently there has been a tremendous interest in the development and understanding of the skills involved in problem solving and the development of related classroom materials. In particular, the major emphasis has been in the mathematics and science content areas and in writing as a problem-solving process (Flower, 1985). Models of problem solving that are not necessarily tied to any particular content domain have been proposed by several authors and are designed to strengthen general problem-solving skills (Brainsford and Stein, 1984; Hayes, 1981).

Teachers of the gifted are usually conversant with the various models of problem solving and the numerous resources available. This expertise can be shared with the regular classroom teachers along with practical procedures, to incorporate problem solving into the regular curriculum.

In summary, the Pre-Development Stage should provide the necessary background for the regular classroom teacher. This background information should include the elements of thinking processes as well as samples and suggestions for incorporating these into the regular curriculum.

Curriculum Development Stage

Developing appropriate curricula for gifted students is a complex, long-term process. As anyone who has been involved in a curriculum development project is keenly aware, the process is one which can last many years. It is vital that everyone involved, particularly those in decision-making roles, be supportive of the efforts to **evolve** a curriculum over time.

The ultimate goals of this model are to integrate thinking and process skills into the curriculum and to enhance or expand the options for gifted children. It may be unreasonable, depending on the experience of the regular classroom teacher, to expect an integrated curriculum development process to become initiated in the first or second year. Many teachers who are novices to the concepts and ideas delineated in the pre-development stage will need time to explore the uses of various strategies within their classrooms.

Classroom teachers are often most comfortable with developing smaller units of instruction rather than larger curriculum scope and sequence projects; therefore, initial efforts should be directed toward allowing the selected cooperatives (regular classroom teacher and gifted teacher) to develop units of instruction which integrate thinking skills into the curriculum the teacher is already using in his classroom. This initial approach has several distinct benefits for the regular classroom teacher, in particular. First, new content is not being introduced along with new process skills. The teacher is simply modifying (or extending) his previous curriculum to include selected process or thinking skills. Second, these units can serve as formative evaluation for the cooperative to determine what areas need further elaboration. For example, it may be found that the classroom teacher is in need of specific resources or assistance in his use of appropriate questioning strategies for students. Of course, feedback after the first several units will be extremely helpful in the design and implementation of future units.

There are well defined procedures for developing instruction units for gifted students that should be used in this stage of the process (Feldhusen, 1988; Treffinger, et al., 1979). It also should be noted that there will be different approaches to the development of curricular units or products, relative to the content under consideration and the orientation of the teachers developing the units. Van Tassel-Baska (1988) provides an excellent categorization of three approaches to differentiating curriculum for gifted students that should be considered in developing units. The three represent slightly different, yet potentially reinforcing, approaches to a thinking or process skills curriculum.

The first approach, a content-mastery model, might be utilized best by teachers in the area of mathematics and sciences. A process-product model could be used in any content area, but might best suit the needs of teachers in the areas of language arts and social studies. An integrated, but slightly more complex, approach would be to develop interdisciplinary instruction units. These have been categorized by Van Tassel-Baska as epistemological models. This approach relies heavily on the teacher's ability to develop units around larger concepts or themes.

It should be noted that an early emphasis on units does not preclude efforts at more comprehensive curriculum development. It is important to note that teachers need time to become familiar with, through active exploration, a variety of approaches to integrating thinking skills into the curriculum. Once approaches have been explored, refined, and elaborated upon, the regular classroom teachers will be better prepared to become involved in the curriculum development process.

As the process of cooperative unit development evolves, it is appropriate to begin to involve more teachers in the collaborative efforts. One particularly cost-effective method is to have the trained teacher (either the teacher of the gifted, or the regular classroom teacher who has been involved in the curriculum cooperative project) make brief presentations to select faculty during regularly scheduled faculty meetings. For example, a presentation on how to use questioning strategies in science could be presented to all fifth-grade teachers. These presentations are most effective when they: 1) are brief (15-20 minutes); 2) are directly relevant to the teachers (hence the focus at one grade level and a particular content area); and 3) give teachers some precise strategies or materials which can be tried out in their classrooms.

An essential component of this process is to assess the impact of the cooperative on the goal of infusing thinking skills into the curriculum. A full-scale evaluation is not warranted and goes beyond the scope of this article. A formative, qualitative evaluation of the **process** of this effort will provide information for improving future cooperatives.

A formative evaluation should focus on the amount and quality of time spent in the pre-development and curriculum development stages. Specifically, issues such as resources, timelines for development, and student outcomes should be assessed.

Summary

Through gifted education, we have a unique opportunity to influence the scope of educational reforms currently being considered and implemented. The emphasis on thinking skills is tailor-made for the talents and resources of those who have been meeting the needs of gifted, talented, and high-ability children. In particular, the model outlined allows for several specific benefits to school systems. First, it serves to establish cooperatives among teachers, resulting in more unique, relevant curricular products for students. Second, it expands and strengthens the role of gifted education. Third, by implementing this model in the early elementary level and allowing all students to have access to thinking skills such as creativity and critical thinking, the reliability of the selection process is increased. Rather than supplementing the gifted program, the model allows for better selection of students demonstrating talents by emphasizing the range of individual differences among children. Through the explication of this range of talents, we have the opportunity to provide programs which will better serve the needs of gifted, creative, and talented children.

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CRITICAL, CREATIVE AND COOPERATIVE THINKING ACTIVITIES FOR GIFTED MATH STUDENTS

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CREATIVE TOOLBOX

Weebles, Wobbles, and Widgets help junior mathematicians in Northbrook's District 28 Elementary Gifted Math Program learn critical and creative thinking strategies. Activities are selected for their high-interest, integration with other subject areas, and challenges within success levels; and activities lend themselves to illustration, acting, writing, creating, producing, analyzing, sorting, application, synthesizing, and evaluating, in order to utilize the total brain for learning. Products become presentations in class, bulletin board displays, or activities shared with other classes. Examples include a "measurement march" to other classes, wearing sandwich boards created by students, students acting as historic mathematicians, and contests with other groups.

Fourth-graders engaged in critical and comparative thinking when studying the similarities and differences, and advantages and disadvantages, between our system and the number systems of the Babylonians, Mayans, and Romans. This tied into our study of place value and other number bases, entitled "Jumbo Numbos and Other Great Values," to encourage flexibility and adaptation in number thinking.

Story problems came to life when pairs of fourth-grade mathematicians acted them out. The educational and social aspects of this were quite rewarding. Costume ideas were born, and scenery, props, parent involvement, arguments, and compromises. Students then presented the story problems, their solving strategies, and the answers. A duet of opera singers clad in mothers' long dresses, high heels, and makeup, sang a story problem aria about a Yellowstone geyser. A newcaster presented a serious newsflash about geyser eruptions, speaking into his homemade foil microphone. Slapstick comedy followed. Two student desks were placed eight inches apart. The narrator stood behind them and read the problem. His special effects man, mouth filled with water, crouched beneath two desks, his mouth level with the opening between the desks. When the reader came to the part where the geyser erupted, the partner enacted this with the water, a demonstration that surprised and delighted us all!

On another day, puppets explained story problem-solving techniques and told about famous mathematicians in history. Young authors rewrote story problems in their own words, adding related but unnecessary information to intentionally complicate the stories. Classmates delighted in listening to these elaborate situations and identifying the unneeded data. Students became aware of whether statements were useful or noncommital, relevant or irrelevant, and whether statements answered questions directly. Pupils created story problems to translate number equations into sentences, eliciting much discussion and sorting of different equations.

Toothpaste boxes, snack wrappings, and orange juice cartons brought from home suggested student-written problems on measurement, area, perimeter, volume, weight, and cost. The containers went up on the display board along with their story problems.

As part of our Fraction Action unit, students were given choices of projects requiring them to make a collage of fractions from magazines, collect and act out circle graphs, or create a puppet show to explain computation of fractions with unlike denominators or conversion of improper fractions to mixed fractions. Students could dramatize a story, relate fractions to music and play a short instrumental piece, interview adults on the use of fractions in their work, create a TV quiz show, double and share a recipe, write a tall tale about an improper fraction, or plant, chart, and graph the growing of a potato. Classes exhibited high interest, with everyone sharing something different and students learning from one another. "Textbook" lessons were often "taught" by students; each student or pair of partners presented a different lesson. This encouraged working together, solving, planning, and selecting the essence of the lesson.

Division mystery stories were solved in cooperative groups of several fourth-graders. Given deductible verbal clues, third-graders acted out Table Logic problems, deciding where each of 4 to 6 people would sit at a table. I loved to stand back and watch the interaction of small groups collaborating, discussing, even arguing over how problems or projects requiring critical and creative thinking should be addressed.

Working backwards, making a chart, and creating an organized list were some of the problem-solving strategies presented to the fourth-graders. In toolbox thinking, a hammer is not used for a job that requires a screwdriver! Students learned to recognize the characteristics of a particular type of problem and to associate it with specific solving techniques. Initially, one of these "mental tools" was explained in the context of a high-interest story problem in class. An extended version of it, using different numbers within the same framework, was done as homework. Illustrations were encouraged. For example, exact measurements of the 12" Weebles, the 8" Wobbles, and the 4" Widgets, little furry people, helped students to determine how many combinations could be made to reach poor Wally Widget, who had fallen into a 40" ravine! The use of creative imagery was demonstrated as students measured and invented the physical appearance of these characters, some in three dimensions.

Then, turning authors, students wrote similar problems, changing the settings, the numbers and the names, but keeping the required basic elements so that the strategies still applied. Months later, these student-written "make a chart," "make a list," "work backwards," and "how many combinations?" problems became a good way of reviewing. When students knew that classmates would be solving the problems they wrote, they utilized their creative thinking skills and produced challenging problems.

Divergent thinking activities drew on creativity, adaptability and modification in a scenario about a paper clip factory heading toward bankruptcy. Each budding inventor created and demonstrated twenty ideas that would make paper clips more interesting. Another inventive task was to combine two things not usually associated with each other, into new and useful products. Mental flexibility to see things in new ways was encouraged. In addition to some clever inventions, a number of very unusual fruit juice and spice combinations were created and brought in for taste tests!

In the second- and third-grade classes, attribute blocks, pattern blocks, and Cuisenaire rods were used in small cooperative groups in a variety of thinking and logic games. Story problems written by students and teachers integrated science and math, stressing larger place value concepts combined with calculator use. The third-graders were studying fish in their regular classroom. In the gifted class, we drew from a book about fish, selecting interesting, but unnecessary, math-related facts, such as the quantity of quills on porcupine fish, the number of whiskers on catfish, and the length of hundreds of river lampreys laid end to end. Students used critical thinking skills to select the relevant data to input into the calculator and made drawings of the fish.

Questioning techniques which encourage critical and creative thinking were used as often as possible. These included asking leading questions without providing answers, asking open-ended questions to encourage connections and contrasts, and using what-if and if-then statements.

Computer programs stressing logic and critical thinking also provide high-interest material. *DynaMath* magazine is received with enthusiasm by fourth-graders each month. It is excellent for its integration of math topics with science, social studies, art, and consumer math. It lends itself to teaching story problem strategies, sprinkled with humor. Additional consumer math topics researched by students through dictionaries, encyclopedias, and parent interviews included the Dow-Jones Industrial Average, the Richter scale, and the cost of gasoline this week compared to its cost when their parents were married. Students learned about income tax, social security, buying and selling a car, and the relationship of math to hats, tornados, sailboats, binoculars, UPC bar codes, and cholesterol. Divergent mental manipulation in computation was practiced in Sum Puzzles for second- and third-graders and by the fourth- and fifth-graders with the "24 Game" contests with other classes.

When new units were begun, a ten-minute overview helped explain to students where we were heading and how each lesson fit in with the whole unit — a good strategy for any subject. Students took turns describing to the class the objective and content of each lesson. Feuerstein's technique of comparison was used to raise students' consciousness of similarities and differences between the preceding lesson, the current lesson, and the following lesson. Speculation or prediction of what we might expect next and topic applications were discussed.

Non-verbal (spatial) critical and creative thinking were included in a geometry unit. Artists designed Shape Art with protractors and polygon stencils. They shaded and colored optical illusions into three-dimensional visuals, completed tangram and pentominoes puzzles, and constructed polyhedra out of drinking straws and by folding paper. Probability predictions followed the tossing of cubeoctahedra in the air twenty times, to see how often they would land on triangular or square sides. These were tallied, graphed, and generalized to larger numbers.

Students evaluate our program frequently. Just as methods of approaching story problems and manipulative activities are kept varied and of high interest, so are evaluation techniques. These range from group discussions of what we learned cognitively, what we made, what manipulatives we used, homework, etc., to how well class members worked together in groups. Some evaluations were written in a math journal on an individual basis. Some were acted out by small groups, like a talk show. Sometimes, titles such as Positives and Negatives, or Math, Manipulatives, Thinking Skills, and Effective Discussions were written on the chalkboard in columns, allowing room for two to three students to stand, discuss, and list their thoughts on whether we accomplished our objectives and whether they liked or disliked the way we did it.

The teachings of Benjamin Bloom, Reuven Feuerstein, Barbara Clark, Arthur Costa, and Joan Franklin Smutny have blended together to shape my cognitive processing for planning lessons. Whatever topics I teach, whichever texts or supplementary materials I select, the basic educational objectives I seek are teaching children to look accurately, read carefully, separate relevant from irrelevant data, check the sense of answers, see the relationship of the subject to other areas of curriculum, compare, contrast, create, and evaluate. These goals should be enhanced by a variety of high-interest activities, humor, kindness, and trust.

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SUMMER ENRICHMENT: TIME TO TRY AN INTERDISCIPLINARY COURSE

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INTRODUCTION

Interdisciplinary courses are often considered as appropriate learning strategies for gifted children. They widen the scope of learning and offer opportunities for critical and creative thinking. When asked to develop a class for gifted six- to seven-year-olds as part of a summer enrichment program, I immediately decided to attempt an interdisciplinary course.

Since I had no curriculum from which to draw and had to avoid doing anything that was being done in the other enrichment classes, I did a little brainstorming on topics that I thought would interest the students and me. Hieroglyphics, numbers in other bases, creative writing, heraldry and flags, maps, music, origami, codes and math problems with multiple solutions all intrigued me and offered opportunities for problem solving and creative thinking. The art teacher suggested an activity using Native American pictographs. Finding a unifying theme was relatively simple; nearly all the topics had to do with signs and/or symbols. I quickly filed away the ideas that didn't quite fit into that mold, and began implementing those that did.

I gathered material from various sources and researched and planned activities that would be appropriate for each topic. I contacted the PTO Volunteer Bureau and found two parents who were willing to come and speak on topics that would fit perfectly into the theme of signs and symbols. One would do a workshop on signing for the deaf. The second had an herb garden she would show us, to use as a baseline for discussion on the symbolic meaning of herbs and flowers. I decided that our culminating activity would be the creation of a fictitious country, complete with map, flag, language, currency, national flower, etc.

RATIONALE AND ORGANIZATION

I now had some content and some products and processes I wanted to include. The next step was to choose a method which would set the tone and give shape to the entire course.

One option was the deductive approach. This would require that students be presented with a generalization about the theme, and all subsequent activities would be used to generate research to either prove or disprove the generalization. I rejected this approach, because students do quite a bit of research during the school year and this method relies mostly on building consensus and convergent thinking skills.

Since I wanted to emphasize fluency, flexibility and other characteristics of creative thinking, I opted for an inductive approach; i.e., students are presented with information and experiences and asked to draw conclusions and create generalizations of their own. This requires abstract thinking and generally more imagination than the first option.

IMPLEMENTATION

The first day, when asked about signs and symbols, it was easier for students to give examples than definitions or uses. In the first activity, the Indian pictograph lesson, I sensed in the students the desire to do it "right" or not at all. They seemed more intent on copying my example than really thinking about expressing themselves.

The second day, I went on to the creative writing lesson. We gathered in a semicircle and talked about language as symbolic. They easily understood writing as a symbol for spoken language, but only a few grasped the idea of spoken language as symbolic of ideas. Even pictographs stood for words, not concepts, in their minds.

Next, they formed triads for rigmarole writing. One person in each group began writing a story and the other two would each add to it in sequence. Only the third writer in each group knew the whole rigmarole story. The first and second writers were surprised at the turns the stories had taken when they were finally read aloud. One second writer was very upset that the third writer had only used four of the seven magical weapons given to the story's hero in the second phase. The poor third writer pleaded lack of time. Although I was able to somewhat console the outraged second author, he determined to rectify the situation by writing a whole story, by himself, at home.

The real surprise of the day was the poetry exercise. Time was short, yet I was careful to be sensitive to how difficult it is for many of them to write on demand. We started out with an empty form, "way down deep." Each child quickly jotted down some ideas as to "way down deep, where?" then listed things that might be found in that way-down-deep place. With that, they wrote the poems. One child wrote about the deep of the sea. Another wrote about "one inch deep" into the carpet. A third wrote about "way back deep" in the freezer. I was delighted with the variety and richness.

Sometimes, the outside world presented an opportunity for debate and values clarification. The day we started our unit on flags and heraldy turned out to be June 14th, Flag Day. I turned the discussion to the then current controversy of flag burning. The Supreme Court was in the process of making a decision and the news was full of both sides. The discussion was lively.

The students loved the heraldry activity. I gave each of them a packet of information on the parts of a coat-of-arms and the various traditional emblems used, from which they drafted coats-of-arms that had individual meaning to them. We pored through books, looking for just the right animals or other symbols. They thought up mottos, most of which reflected life-long values — things they could live by and pass down through generations. One boy, who also turned out to be a highly imaginative artist, had some background knowledge on the subject. He put parts of different animals together to create a new creature. He was the one who designed and executed the flag when the group created its own country. Having bright students honor him for his artwork gave him a new perspective on his talent.

Our two guest speakers from the PTO were big hits. For the rest of the summer after our class on signing, everyone used the hand sign for "Where's the toilet?" The walk to the second volunteer's house to see her herb garden and have muffins and lemonade was novel, and every child found the herbs and their stories interesting. I enjoyed the casual conversations we had during our walk.

Origami and hieroglyphics presented exciting opportunities to work in three dimensions. Several children had done origami before and were able to work on complex patterns. The hieroglyphics required molding objects in clay. One child became quite distressed about the quality of his work; it appeared that his fine motor skills did not match his vision. When he calmed down, he and I talked and examined his clay mold together and decided what could be rearranged and salvaged; he ended up very pleased with the results. The motto for the class was "A mistake is a way of saying, 'Maybe it has to happen in a different way.'" One student became upset because his class was asked to participate in group math activities. He much preferred the greater personal challenge of working on the problems alone.

The "penny exercise" was also popular. Students discovered how much they could tell about a society by looking at one of its coins. The list included calendar, number system, written language, government, economy, metalworking, heroes/leaders, architecture and religion. Students were original and fluent in their answers.

CREATING COUNTRIES

The most exciting activity was "Create a Country." We began with the geography of our countries as the basis for all decisions. This determined not only the terrain, but which natural resources were available. Interestingly enough, both classes independently chose to have a large island with several smaller ones around it. Both chose rough animal shapes for their islands, complete with volcanoes and mountains. We determined wind direction and latitude to decide what types of vegetation would be possible. This information was placed on an overhead transparency. The names chosen for the groups' countries were Fin-Land and Draconia.

The class was then divided into committees to create a large relief map, a flow chart of the government, the written language, number systems, flags and symbols. Both classes were very mindful of the environment and severely limited their energy sources. Each committee wrote a quick plan of how they were going to symbolize their topics, and progress reports came regularly. As they began to work, the subject of history came up. The school had a software program that could organize a time line, and we all agreed that a time line was a good symbol for history. I spent most of my time going from group to group, rounding up supplies as they needed them. Their discussions were fascinating. Sometimes, one group would want to get involved in what another was doing. When that happened, we would go back to the discussion circle, talk out all the suggestions, remind everyone that they had their own jobs to do and that it was their responsibility as citizens to also contribute in their respective capacities, and then we would get back to work. The opportunities to use their imaginations and problem-solving skills were continuous.

The most fascinating development was the creation of a peace treaty. As the students progressed on making the large maps, each class was interested in the work of the other. "Are they ahead of us?" "What have they decided?" "Are they copying us?" The citizens of Draconia came to me one day and asked if they could propose a treaty with Fin-Land. I was delighted. They drew it up, and one boy took it home to type in fancy fonts. Before school began the next morning, he rushed in to see me so that I, as ambassador, could present it to Fin-Land.

To my surprise, Fin-Land rejected it. What could Draconia do for them? Fin-Land was self-sufficient, did not need to trade with anyone, and did not really want foreign tourists at their ski resorts. They formed a volunteer army and, for about ten seconds, considered developing electricity as a means of advancing their technology. They asked me to report their answer to Draconia.

As the Draconians entered the class that day, they were eager to know the response to their offer and were more than a little dismayed when I reported it. Draconia, too, was self-sufficient, and they knew their own technology was superior; they had only wanted to be friends.

Their next step could easily have been to threaten Fin-Land, but instead they set about seeing how they could persuade them to enter into a treaty. They offered to trade them dragon meat, their native delicacy, for fish, even though Draconia had its own fish. They reminded Fin-Land that other nations might attack and Fin-Land might then need help. Draconia, with its force field, did not need or fear Fin-Land, but wanted to be friends. As ambassador, I was given this message and then strictly instructed not to say anything that might be construed as a threat to Fin-Land.

When this second proposal was presented the next day, Fin-Land began to see some benefit to it. They recognized Draconia's technological advantage and I think they began to feel a little guilty about the way they had rejected an offer of friendship. The second treaty was quickly and unanimously agreed upon, and all citizens of both countries signed. During these debates, I acted only as an impartial moderator between the two countries.

After the peace treaty, the final wrap-up was anticlimactic. We generated some "truths" about signs and symbols, such as:

Signs and symbols pervade our cultures.
They have agreed-upon meaning.
Objects can be symbolic.
They are necessary for communication.
They allow us to simulate reality.
They help us solve problems.

EVALUATION

After the class, the children filled out evaluation forms which asked them for their suggestions. There were as many who disliked math as there were who loved it, but all agreed that the guest speakers and creating the countries were most wonderful. Some suggested whole courses on heraldry, creative writing, math games, sculpting, and computer games. Everyone wanted to create more countries. In fact, a whole planet with many countries was not beyond them at that point. I hope it is not beyond me!

One student, a first-grade girl, wrote that "the kids" are what she would remember most about the class. I agreed with her. This multi-age collection — strangers to one another before they met on the first day of class — molded themselves into cohesive groups. Personalities merged and emerged, as did leadership. One of the older girls became the leader of the 9:00 class. She would organize students, nurture the younger ones, and express opinions but never impose them. There was only one girl in the 10:30 class; although generally considered shy, she held her own and asserted herself whenever the situation warranted it. The boys accepted and included her. Her ability as an artist was more than affirmed. We also had twins in that class, who had a reputation for working only with each other, but even they contributed to the general discussions and often went separate ways when working.

The lack of pressure and competition, the smallness of the classes and general acceptance of one another's abilities contributed to these behaviors. In their regular school classrooms, these children had been labeled "smart" or "gifted," and that is how their age peers perceived them. It set them apart. In this class, that mark of identity was gone. No one put them down if they did not always live up to their reputations. Ideas flowed freely. If motor skills didn't match mind skills, everyone knew what was meant, anyway. If one didn't finish a project or wanted to do it over at home, that was fine. In contrast to the regular school year, the finished product was much less important than the originality of the idea and the process of realizing it.

MEETING OBJECTIVES

Did I accomplish what I set out to do? I believe the class was creative and educational. The students' parents told the principal and me that their children loved the class. They said it was "awesome." I enjoyed it and learned from it. We provided problem-solving experiences that were challenging for gifted students and crossed many subject areas, learning strategies and processes.

The class was very successful in producing an atmosphere that allowed the students to work creatively and take risks. As the lessons progressed, the students were less concerned with my expectations and more concerned with developing their own ideas. There was no "right" way. There were no behavior problems, no lack of motivation. Any disagreements were settled by discussion, and problems were worked out. Perhaps the most positive results of the program were enjoyed by the children, in what they gained from having shared in the experiences.

THE FUTURE

Plans are already being discussed for next year. We originally hoped to run this curriculum for two consecutive summers, so that more students could be involved; but the parents' responses indicated that they would like to see extensions of our ideas, advanced levels of what we did, and new classes.

I may take on the challenge the children proffered and spend four weeks creating a planet with them. There are so many subjects we could cover — from plate tectonics and ecology to global peace and sharing limited resources; the imagination reels.

The whole project demanded much work of this educator, but it also provided her the opportunity to teach topics which do not have a place in the regular curriculum and to present them in a non-competitive environment. Summer enrichment programs like this also can provide models for inclusion in the regular curriculum. Children's capacity for creativity is unlimited when we provide right opportunities.

CREATIVE LEADERSHIP: A NEW VISION FOR EDUCATION

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Creativity can be seen as an impassionate quest for expression and meaning through form. It is not easy to be creative. Being creative means becoming involved in the restructuring of existing systems. It calls for courage to lead and to create the shift to new visions, ideas, attitudes, and structures. Creativity also has the power to nourish meaningful relationships with others, our world and within ourselves. John Curtis Gowan (1981) defined giftedness as the potential to be creative.

In the field of gifted education, we have been learning and teaching about creativity for many years. It is now critical that we harness our knowledge, skills and potential to become a creative force in the movement to restructure American education. I believe the future of gifted education and the future of education as a whole stands to either gain or lose tremendously depending upon the actions we take at this time.

We have the opportunity and expertise to offer leadership and solutions, as educators strive to shift to new visions, attitudes and ideas. We understand what kinds of structures are needed to support educational experiences that include interdisciplinary learning, learning for thinking, group project-based learning, and alternate forms of assessment. These and other aspects of the current educational reform movement have been standard practices in our field for a long time. We have developed curriculum models, instructional models, programs, materials, strategies and approaches that make this style of education viable. We also have a cadre of people who are wonderfully skilled in these areas.

Gifted education has grown in the past twenty years, for the most part as a supplement to the regular education program. In classes which were lock-stepped and mainly focused on rote learning, we have offered new alternatives to students in desperate need of more appropriate curriculums; however, there has been a major change in the thinking of what is appropriate education for most students. Whole classes now are moving toward the kinds of learning experiences we have been practicing, demonstrating and encouraging.

We have been very successful in raising the awareness of and desirability for better forms of teaching and learning. We must now take an active role in bridging the gaps between regular education and gifted education. We no longer can stand outside the doors of regular education. We must work as teammates and collaborators in creating a new vision of what education for all children, including gifted children, will be. It is imperative to build more bridges between regular and gifted education.

A marvelous quote by Christopher Alexander (1989), American educator and architect, reads:

> *When you build a thing you cannot merely build that thing in isolation, but must also repair the world around it, and within it, so that the larger world at that one place becomes more coherent, and more whole; and the thing which you make takes its place in the web of nature, as you make it.*

Despite the challenge of this perspective, I see no other effective route for gifted education at this time. We must weave more of our threads into the fabric of American education or risk losing not only our tapestries but the ability to reach and develop the gifts of many future students.

The exciting thing is that it is possible to accomplish this. After long and careful thought, study and fieldwork, I propose three major constructs that will work to shift perspectives, further the growth of gifted education, change outdated general education practices and provide direction for the restructuring movement that is sweeping America.

You might view these constructs as three primary colors that when blended together can create an almost infinite number of possibilities. Having shared these ideas successfully with educators outside of gifted education, I would like to list and then discuss these points. The constructs:

1. Bring out the creativity and giftedness in all learners,
2. Integrate academic content and productive thinking skills, and
3. Stretch our classroom horizons.

As we prepare students for the 21st century, it is time for a new educational paradigm. These three constructs serve as guides for creating this paradigm.

Bringing Out the Creativity and Giftedness in All Learners

Many people in gifted education shy away from this idea out of concern that it means that our students will be forgotten; however, we stand a greater chance of meeting the needs of all students when we lessen the threat that is often felt when the concept of giftedness is encountered. If all students, teachers, administrators, parents and community members are encouraged to bring out their gifts and talents, then we can join together in a common pursuit and lend support to one another. We can acknowledge the gifts of students who have not been formally identified because our identification practices are insufficiently developed.

Some of us hold gifts in academic disciplines, others in creative pursuits, some in the visual or performing arts, still others in mechanical areas, or in interpersonal relations. One year I taught a second-grade class with a student whose test scores and performance measures in academics and intelligence were outstanding. He could work way beyond grade level. This student was also quite self-absorbed. I had another student who was labeled learning disabled and struggled with help through pre-primer materials. This student had a sense of empathy, compassion and a willingness to help others that was truly extraordinary. Society needs both sets of gifts.

In this time of increased student apathy, rising drop-out rates, continued drug and alcohol abuse, and with the seriousness of the problems of at-risk students, we hold a valuable key. The idea that we all have gifts and we all have challenges can help young and old alike. It opens doors to gaining self-esteem and seeing ourselves as having purpose and something worth developing and contributing. It also helps to build positive relationships with others.

William Purkey (1978) brought us awareness of the power of "inviting success." Paul Torrance (1965, 1979) has taught us about the need for expanding our concept of giftedness to include creativity and has shown us what happens when we reward creative behavior. Joe Renzulli and Sally Reis (1985) and their colleagues have produced programs and research demonstrating what students with keen interest can achieve. Calvin Taylor (1986) and Carol Schlichter (1986) have helped us understand that students have different kinds of talents. Howard Gardner's (1983) work with multiple intelligences has begun to have an impact on people. In addition, many educators (Guild & Garger, 1985) are now accepting that there are various teaching and learning styles that need to be considered.

We are becoming more comfortable with individual differences. Now we need to take an active role in making talent development an attitude and goal for everyone in our schools. Pansy Torrance once let me look through and copy some of her overheads, and one has become a favorite of mine. It is a picture of a caterpillar with the caption "Be careful with fuzzy small things. You never know what they might become." In this kind of supportive, nurturing, educational environment even our brightest and most creative students survive and are encouraged to thrive.

Integrating Academic Content and Productive Thinking Skills

It was my pleasure to meet Joan Franklin Smutny when she came to Oregon last fall to give a keynote speech at our Talented and Gifted Conference. She brought with her a vision of what the best gifted education has to offer — excellence, equity and moral responsibility. Smutny touched the hearts and minds of the audience as she talked about bright and creative children, including the young, the disadvantaged, and the many cultures they represent.

In Oregon, we are working in response to a new law requiring schools to identify intellectually and academically gifted students this year and provide services the following year. The law further specifies that we meet students' instructional needs by modifying and varying our academic programs to fit their ability levels and rates of learning. Although our legislation comes later than that of many states, we are pioneering new ground because we must change academic programs.

We find ourselves tackling issues such as how to assess levels of learning in different subjects; how to design, implement and evaluate learning plans; and how to modify, accelerate and differentiate curriculum across disciplines to meet students' academic needs at their levels of ability. In our search for answers we are creating solutions that may hold promise for others.

Because our laws require that students' academic work be modified, we must change what is happening in the regular classroom. One of the terms Smutny used in her speech was "learning setting." This concept can be used to help establish criteria for determining if students are appropriately placed. Are students being asked to work on material they already know, and therefore are not being challenged to learn, or are they in a "learning setting?" Schools may offer special advanced classes and courses and provide resource room time, but most cannot afford, or choose not, to go this route for all subjects. We are exploring multiple options.

We are finding success with a collaborative team approach, with the educator of the gifted also serving as a consultant/teacher. This is not new to gifted education but we are doing more of it. Special educators (Gersten, Darch, Davis, & George, 1991) also have adopted this model as more of their students are mainstreamed. It seems that more of education in the future will revolve around a collaborative team approach to planning and meeting needs.

The first step to success with this approach is to discover what teachers are doing already that allows students to rise to their potential levels of ability. One of the common elements of most popular new instructional programs for the classroom is that they integrate academic content with thinking skills. This is true, for example, across the curriculum with whole language, hands-on science, and problem-solving math. These can be good starting points for building programs for gifted students.

Too many teachers do not have the background to understand the thinking skills and process skills upon which these programs are based. They grasp the programs, but do not use them as tools to teach critical and creative thinking, or research skills, study skills, communication skills, task commitment or the like. Many lack the frames of reference that we have had to learn and depend upon in gifted education because we had to create our own curricula. We can be valuable resources to teachers and parents by helping them understand the core elements that make these programs work. This enables teachers to be more in control of their own teaching designs and gives them a base and a structure for understanding how to modify curricula for gifted learners and other students.

We can share our resources and help develop artistic teachers. We can present demonstration lessons, co-teaching lessons and share strategies, lesson plans and materials. As the national thrust reaches forward from the different disciplines (science, social studies, language arts and mathematics) to include the teaching of thinking skills for all students, we can communicate our experiences and be active supporters as teachers struggle to change methods. The more teachers can do in the classroom to provide appropriate curriculum for our students, the further we can develop skills, offer challenges and provide guidance in special programs.

We have been working with groups of children in cooperative and productive thinking settings for a long time, with formats like Future Problem Solving, Odyssey of the Mind, small group investigations and seminars. We can speak knowledgeably about students working in cooperative groups and the ways in which we have developed their skills and what kinds of groupings work best in different situations. We have the experience and abilities and can create the opportunities to offer leadership and direction.

Stretching Our Classroom Horizons

In gifted education we have learned to stretch our horizons beyond the four walls of the classroom and beyond the prescribed curriculum for students of a particular age. Of course, in some instances that has landed us in storeroom closets and behind stages or in whatever nook or cranny the schools might have available; but wherever we land, we still teach higher level thinking, bring in all kinds of extra books and materials, create our own curriculums, set up science experiments, use computers, hold archaeological digs, invite community people to speak at our school, set up internships and encourage our students to submit work to local publishers and, when possible, communicate with wider audiences. We deliver fine educational experiences to students, despite the limitations.

We now can serve as catalysts as other educators realize they must change the way their classes are configured in order to provide better services to students. One of the middle school teachers I work with, Joyce Parmeter, recently said, "Education is taking away the ceilings and walls," but change is difficult for people. There are some important skills in this area that can be shared with our colleagues.

One of the mainsprings of gifted education is the inclusion of the affective with the cognitive. We have helped our students develop their skills in this area, and we can lend support to our colleagues. We can talk about the creative process, how hard it is to step into the unknown, and explain how the process works. We can work with our colleagues to set up support systems for ourselves as staff as we go through this restructuring process.

We also can share our creative problem-solving models and our tools for consensus and group building as our schools search for solutions and take on more site-based management approaches. We need to share our excitement and enthusiasm for educational experiences that take place when we stretch classroom horizons across disciplines, grades, schools, and into the community. We can model, bring in resources, and invite others to participate with us.

The advances in computers and technology open up worlds of possibilities that we can bring into our schools. Some of us are already including the use of data bases, modems, bulletin boards and networks. Add to this the integration of laser videodiscs and audiodiscs and satellite television and you can really spark imaginations about the educational reforms we might be creating.

I have begun teaching graduate courses through an interactive distance-learning network. We broadcast from a television classroom at one of our community colleges and teachers participate from their schools. We can hear everyone talk so we are able to communicate with one another across the state. It is a wonderful way to bring people together in a new "learning setting" style. By the time you read this, we will be able to link up with businesses, government and public agencies, and other higher education sites. We will also have the capability to reach network schools throughout the northwest.

Closing Thoughts

The field of gifted education holds many keys that can effect the restructuring of education. These three major constructs are designed to serve as organizers and communicators as we reach out to share our vision with others beyond our field. Bringing out the creativity and giftedness in all learners is the beginning point because it places the focus on the individual. Everything else follows. Excellence in curriculum, instruction, programming and delivery models occurs when they are appropriate for our students. This is one of the basic premises of gifted education.

Integrating academic content and productive thinking skills is the next guide, as schools make decisions on how to structure curriculum and education. We know the incredible value of relevant and productive learning experiences. Most of our models are designed to help students function in this mode. Imagine whole schools operating around this goal. Not all students will go as far or as independently, but all students will need to learn these skills for the future.

Encouraging our colleagues and ourselves to stretch our classroom horizons is really an exciting process. Working collaboratively, we can explore new programming options for students, new staffing arrangements, better uses of community resources and technology, and more effective sharing arrangements among schools and across districts. When we start by thinking about individual students and ask how we might best meet their needs, we begin to realize that we have a lot more choices when we open the doors and ceilings of our classrooms. Our options may be as unlimited as our creativity.

Specific examples and contributions from our field are too numerous to mention, but I think you will find that most can be understood, using these three main constructs. In this time of restructuring, we would be wise, like some leaders in special education have proposed (Barringer, 1991), to offer our assistance and leadership. It is time to be gifted, courageous and creative, so others might build on our progress and together we can chart new territories for our students.

In closing, it is my privilege to share with you a thought from Paul Brandwein (1981), a gifted leader whose forward thinking and creativity has contributed so much to education. This quote is from his book, **On Renewing Schooling and Education:**

> A single life cannot outwit time, but perhaps the contributions of an educated people, gracious and civil and informed and acting in concert, may triumph. Thus we may prevail (p. 269).

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TECHNIQUES FOR STIMULATING STORY WRITING AMONG YOUNG GIFTED CHILDREN

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This article discusses a series of guidelines for developing a story-writing curriculum for preschool through kindergarten programs for young gifted (or potentially gifted) children. These ideas are based on the author's experiences in teaching young gifted children and in conducting research in emergent literacy.

During the last decade there has been a long-overdue movement to identify young, potentially gifted children and to provide appropriate educational programs for them. (Schlagger, 1984; Blocksom, 1984; Gage, 1984; Wolfe, 1989). Finding appropriate curricula for gifted programs is not easy. Often, curricula are selected to match only children's academic abilities. This means that gifted preschool children, who are functioning academically at the first- or second-grade level, are given curricula from a regular first- or second-grade program. Such a practice may overlook critical developmental needs (Wolfe, 1989). Implementing a developmentally appropriate curriculum at the preschool through kindergarten levels has recently become a major concern of early childhood educators (Bredekamp, 1987).

The writing curriculum proposed here was developed specifically for gifted preschool and kindergarten children and was defined further through several years of implementation. The focus of this writing curriculum is on the creation of stories. Children are invited to write: *"Create a story any way you want to."* The emphasis is on the communication of a message rather than on isolated skills or the mechanics of writing or decoding.

Many pre-primary children who have been identified as gifted, potentially gifted or academically able have already begun to explore literacy related activities at home. Many already know the alphabet and can form many or all of the letters. Some are able to read conventional print, ranging from environmental print to texts of specific readability levels. To focus on isolated skills with these young children would be inappropriate. The story writing task is a "whole language task," requiring children to integrate their knowledge of reading and writing (decoding and encoding) as well as their prior experiences and knowledge of the world. It is this act of composition that challenges and engages the young child. Composition has been defined as "moving ideas from hidden spaces within our minds to detectable spaces in our outside world" (Temple, et. al., 1988, p. 216). According to Dyson (1981), writing begins "not necessarily with an understanding of the alphabetic principle [but] with an idea . . . and the discovery of some strategy for making that thought visible." (p. 783).

In this story-writing curriculum, children are encouraged to become involved with the process of communication and to use a full range of writing and reading systems (Sulzby, Barnhart & Hieshima, 1989). The guidelines that follow involve curriculum development and implementation, from defining the content of the curriculum to techniques of implementation and assessment.

Provide a content-rich curriculum

One of the characteristics of young, gifted and potentially gifted children is their intense curiosity (Roedell, Jackson & Robinson, 1980). Curricula that do not challenge or stimulate young children may lead to boredom, and eventually to disruptive behavior for children who have a low tolerance for intellectual inactivity (Wolfe, 1989). A content-rich curriculum gives children information and ideas to write about (Loughlin & Martin, 1987) and will keep their curiosity alive. Literature forms the basis of the content-rich curriculum for young gifted learners. Books are read by the teacher to the children, with an emphasis on monitoring children's comprehension of concepts and/or story line. Literature is an important stimulus for writing (McGee & Richgels, 1990).

Although many of the children in our progam were not yet reading conventionally, their high levels of listening comprehension and general world knowledge merited fiction and nonfiction containing advanced conceptual material and complex language structures. Frequently, children brought to class books they had selected from a local library or from home. Before class, these children could be seen sharing books with one another and talking about the concepts involved. It was delightful to see two four-year-olds carrying on a focused conversation about volcanoes.

A content-rich curriculum places a strong emphasis on vocabulary development. Expanding conceptual knowledge requires learning the names of the concepts. It encourages greater differentiation in the children's oral and written expression. Vocabulary development should be embedded in meaningful hands-on learning activities as well as in carefully selected literature that is read and shared. Encouraging children to participate in oral discussion of the similarities and differences among concepts also furthers vocabulary development.

The content-rich curriculum should draw on and expand past experiences and areas of special interest. Many children in our classroom had travelled widely and could add their perceptions to class discussions of various locations or events (e.g., volcanoes, ocean life, mountains).

Provide regular opportunities for writing

The way in which any curriculum is structured implies the degree of importance given each scheduled activity. By allotting time for the composing process every day, its value as a learning activity is made clear.

Exploration and creation take time, whether they involve exploring artistic media, designing a block structure, or creating a story. A rigid, limited schedule can stifle creativity, particularly among young gifted children, who are often highly self-motivated and appear to resist regimentation.

Provide story topics and pre-writing discussion

In our work with young gifted children, we found that they welcome suggestions for story topics as a way to begin thinking about their stories. Prior to each story writing session, a trade book was read and discussed. A related story topic was suggested to the children when they met in the smaller writing groups. Story topics included an animal story, a spring story, a fairy tale, an adventure story, a tall tale, and others.

Oral discussion prior to writing proved to be very important. The story topic was briefly discussed at the beginning of each writing session. For example: "Today our storybook was **Harry the Dirty Dog.** (Gene Zion, 1956, NY: Harper & Row). Let's think about some stories we could write about animals." Children then spontaneously offered suggestions about possible story characters and/or events. As this occurred, they began creating their stories on paper. Not all children chose to use the suggested topic. One child wrote all of his stories about "snowfire." Other children chose topics of special meaning to them; e.g., birthdays, a younger sister's new abilities.

Provide materials that stimulate creativity

Children in our program were given blank storybooks (two sheets of plain 8½x11 paper folded in half, with one sheet of construction paper for the cover, all stapled together in book fashion). Fine-line felt-tip markers proved to be the most popular writing implements, because of their bright colors and bold lines.

Using this book format encouraged the children to think about book conventions: cover, title, author, illustrator, and dedication page. Children left the classroom with "real books" they had created.

Provide opportunities for children to work together

Story composition involves communicating a series of ideas to an audience. Allowing children to share their ideas orally as they are writing them down provides rehearsal time. In small group settings, our children formed informal conversational groups, in which they communicated their intentions and story ideas.

We found it was also a time that children could help one another or collaborate in a variety of ways. Often, conversations focused on the topic as well as on individual writing techniques. Sometimes, children would help one another form letters, spell words or draw. One day, two children exchanged phone numbers in their storybooks so they could talk to each other during the week.

Children's conversations seemed to afford oral feedback from an immediate audience as they were creating a graphic product for a more removed audience (parents/siblings at home). For example: "This is going to be an alphabet book." "Mine's going to be a picture book." "How do you spell illustrator?"

Expect children's writing and reading to show variability

The children varied their styles and techniques, individually and collectively, from week to week (Otto & Sulzby, 1989). A wide range of writing systems were used, from communicating through pictures, to scribbling, invented spelling, and conventional print; from labelling and describing, to stories that sounded like "book language."

Sometimes, children focused on encoding, attempting to write the message conventionally. Short story fragments were usually the result. Kara wrote, "I went to the park with my papa" for her adventure story. Other children created rich, elaborate stories when "reading" but did not conventionally encode their stories. Ariel's stories, when read, ranged from 13 to 137 words but were usually graphically expressed through pictures and wavy scribbling.

Provide opportunities for story reading/sharing

Asking children to read their stories aloud provides a way for them to share them. This is especially important when a written story is not in conventional print. This "reading" also allows the teacher to look at the child's knowledge of the writing and reading processes. During this sharing the teacher assumes the role of interested listener, rather than judging the accuracy or conventionality of the child's "reading" and can thus observe the child's interaction with the storybook he created.

As the child "reads" the story, the teacher looks for the focus of the child's attention. Is it on print or on a picture? Does the child open his book while reading? Does the child read from front to back, or from back to front? Note the complexity of the language used. Does it resemble an oral story or does it sound decontextualized like "book language?"

A categorization system has been developed (Sulzby, 1985; Sulzby, Barnhart & Hieshima, 1989) that provides teachers with a way to carefully examine children's early reading and writing attempts from an emergent reading and writing perspective.

Allow children to take their storybooks home

Ownership of one's creation is very important and serves as a motivating factor. Several children wrote/inscribed "for Mom" on their book covers. Others indicated they planned to share their storybooks with fathers, siblings, and/or grandparents.

While it is important to keep copies of children's work on file for recording growth or change, original copies are not necessary. Audio recordings of their "readings" and photocopies of their storybooks can be made. These can be shared with parents as conference times occur.

Conclusion

The potential gifts of young children need to be nurtured (Bloom, 1985). This can only be accomplished with curricula that are specifically defined and designed for young gifted learners, not simply "watered down" programs for higher grade levels (Wolfe, 1989). Curricula must consider the young gifted child's developmental needs as well as his unique abilities and advanced level of knowledge.

The writing curriculum described in this article is flexible enough for a broad range of emergent reading abilities. It is child-based in the sense that children select and develop their own stories, creating them "any way they want to." A writing curriculum that centers on creating stories challenges young children to explore and develop ways of communicating. It helps them integrate their experiences and their imaginations (Buescher, 1984).

One child's own evaluation of his progress gave us an elucidating glimpse of the impact of our story-writing curriculum. In the midst of reading his story during the eighth grade session, Jacob (age 4) paused and said, "I'm getting good at this stuff."

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BRAVO, MINSKI BRINGS BIG THOUGHTS TO YOUNG READERS

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Sometimes, a book comes along that distills enough human history into a small, manageable whole, that it takes more than a cursory reading to unravel its detailed and highly suggestive contents. Such a book is **Bravo, Minski** (1988), one of Arthur Yorinks and Richard Egielski's latest contributions to the world of children's literature. It is a treasure-trove of allusions to some of the greatest minds Western civilization has known. Many of these meaningful references can be readily decoded; however, a number of them are hidden or obscure, and send even the most knowledgeable readers scrambling to the library reference shelves for encyclopedias, specialty dictionaries, almanacs, and even a few biographies, in order to unscramble the mysteries.

It is precisely this complex of compacted allusions pointing to the world of prodigious talent, that makes **Bravo, Minski** a book worth sharing with gifted students, who especially enjoy its immediate literary impact (the story line itself, apart from the intertwining allusions, is spunky, humorous and entertaining) and the subsequent detective work involved.

Put on your detective's hat and join me for a brief excursion into the world of Yorinks and Egielski — and the boundary - breaking thoughts of young Minski . . .

Allusions to the World of Science

On the first page, Yorinks begins by exclaiming: "Brilliant. Extraordinary. Astounding. A genius. He was, perhaps, the greatest scientist ever known to man. His name was Minski." Thus, we are introduced to the main character, the charmingly brilliant boy wonder, Minski, who over the next few pages recites the law of falling bodies, discovers electricity in lightning, invents the toaster, the airplane and the telephone, and much more. With each turn of the page, the author/illustrator team not only establishes Minski's genius, but treats us to a delightful case of exaggeration.

Putting monocle to eye, we find, as we begin to dig into the multiple allusions, a fascinating world that starts with the young Minski inventing numerous gadgets and machines.

Scientific Formulae. On the first page, we find a stoop-shouldered Minski sitting on a three-legged stool, pondering a series of chalk scribbles on the floor before him. Slightly beyond him is a drawn curtain. Minski, dressed as a harlequin, is waiting for the curtain to open on him to begin his performance as a gifted singer.

We begin to make certain associations from the information contained within Egielski's illustrations. Minski's suggestive pose as he ponders the scribbles before him, beyond reminding us of Rodin's "The Thinker," elicits an ancient age, an age before the chalkboard, writing tablet or computer monitor. The chalk scribbles on the floor, resembling scientific or mathematical formulae, recall the early history of scientific invention, which has the greater part of its origins in ancient Greek thought and the activity of such giants as Pythagoras, Euclid and Archimedes. A little nosing around in the reference stacks produces anecdotal accounts of the quick-minded Archimedes drawing his mathematical annotations in the shifting sands of Syracuse, long before such writing standards became prevalent. Is this the association our author/illustrator team wants us to make? Perhaps.

The Law of Falling Bodies. Before long, we jump into a new time, place and context of association. We join Minski, who is now three years old, as he is walking across a bridge. He heaves an egg into the air, only to discover (after it splats on the forehead of a passing dignitary) that "What goes up . . . comes down."

It is not difficult for us to ascribe this action to a lineage of scientists who have thought about this particular phenomenon. Again, we bethink the early Greeks and credit Aristotle with the first recorded (mis)conception. Not only did Aristotle state that all objects that go up must come down, but he espoused the notion that heavy objects fall at a greater speed than lighter ones.

When the Italian scientist, Galileo Galilei, began his experiments with falling bodies at the end of the 16th century, Aristotle's mistaken notion was put to rest. Galileo determined that falling bodies fall at the same speed, regardless of weight and size variations. He also discovered the nature of gravitational acceleration, i.e., that falling bodies constantly acquire more speed as they fall.

Lightning's Electrical Current. As we turn the page, we alight upon an allusion to Benjamin Franklin's famous "kite" experiment. With his son, William, as his assistant, the inquisitive Franklin launched a kite in the middle of a thunderstorm. As the kite flew high among the storm clouds, a charge of electricity descended the wet string. When Franklin noticed that the loose threads of the kite string were standing up, he gently touched his knuckles to the key that suspended from his end of the long, wet string. A small electric spark flickered. Franklin thus proved that lightning contained an electrical charge.

The allusion to Franklin's experiment is a particularly artful recombination of elements into a humorous whole. We see Minski walking behind his father, who is holding an umbrella to shelter him from the mounting rain. In what appears to be an act of boredom, Minski kicks his father's dangling set of keys. The keys fly into the air and are hit by lightning, electrifying the keys, the umbrella, and Minski's father; however, all is well because Minski then and there discovers the electric toaster. He finds the bread roll that his father had dropped after the spark, and to his amazement it is now sizzling hot — and delicious!

More Incredible Inventions. At this point, the young and gifted Minski unveils a succession of other inventions, seven in all. In London, he introduces the telephone (an obvious allusion to Alexander Graham Bell's remarkable endeavor). In Paris, he unveils the airplane. The third is an allusion to Thomas Edison's electric light bulb, and the fourth is the invention of the automobile.

The fifth, sixth and seventh allusions are entirely obscure (and humorous) and send even the most encyclopedic minds to the reference books. Minski invents the eyeglasses (attributed first to the 13th century monastic, Roger Bacon), the aspirin (first developed in Leverkusen, Germany by Bayer Ag in 1899) and the washing machine (the first patent for a complete, self-contained electric washing machine, known as the Thor machine, was registered in 1907 by the Hurley Machine Company of Chicago, Illinois).

Hold on to Your Hat. In the final allusion to the world of science, we see Minski igniting the fuse to his new discovery, the liquid-fuel rocket. Rockets have been documented as far back as the 13th century in Europe, and even further back in Chinese scientific history, but these were solid-fuel rockets. It was not until the early 20th century, with the development of the liquid-fuel rocket by the pioneering American scientist Robert Goddard, that rocket technology could sustain more than short flights and light payloads.

In Egielski's illustration, Minski could well be the young Goddard, except for one minor feature: Minski's rocket carries a person. Without too much more information to go on, except for the fact that Minski's daring astronaut lands on the moon, we can only speculate as to the origins of the allusion. What adds interest to this particular episode are the direct references to the great genius of the Renaissance, Leonardo da Vinci, who happens to be looking over Minski's shoulder. This is apropos, because in the late 15th century, da Vinci scribbled out three or four working sketches for models of flying machines; but Minski's liquid-fuel rocket is too much even for the great Leonardo, who hems and haws, "Has this boy got brains? What a noodle!"

What a noodle, indeed! Yorinks and Egielski so far have amassed a list of inventions and discoveries that would revolutionize any society; but do they stop with the realm of the scientific? No! They go on, to make the grandest allusion of them all.

Allusions to the World of Music

Unlike the multiple allusions related to scientific discovery, Yorinks and Egielski make only a handful to the world of music. Also unlike their scientific counterparts, these allusions are rich, deeply interrelated, and provocative.

When we are introduced to the great Minski early in the book, the question is raised, "And of all the theories and inventions Minski created throughout his lifetime, which still stands unequaled to this day?" Yorinks doesn't hesitate; he crones, "His singing, of course." Above all of Minski's great scientific achievements, what he wants to do the most is to perfect the human voice. What a scientist, indeed!

The Incomparable Mozart. As the musical associations begin to stir in our minds, we recall the life of the great composer/musician, Mozart. His genius, unlike many who have possessed inordinate gifts, has withstood the test of time. What's more, we remember him as one of the most gifted child prodigies that ever lived. By the second half of the book, the young Minski has all of the characteristics and some of the trappings of the young Austrian composer.

The first clue appears when Minski's father decides to cart Minski, a young prodigy, around the countryside to show off his incredible gifts. Yorinks forges the first connection by bestowing on Minski's father the name, Leo, which is the name of Mozart's father (although he preferred the more formal, Leopold). Egielski cements the link by depicting the young Minski and his father in the style of dress of 18th century Europe.

The Great Farinelli. Next, we see Minski arrive at the papal court in Rome as a tender adolescent of thirteen or fourteen (the same age at which Mozart arrived there). It is before the court, where he has come to receive the prestigious Le Prix de Science, that Minski hears the great Farinelli, whose singing instantly mesmerizes him: "How does he do it? How can a voice make such music? What is music? What is **singing**? I'll find the answers. I must, I will!"

Here, as in many instances, Yorinks has reversed the details. He has the great Farinelli performing for the young Minski, while it was actually the other way around. Farinelli, whose real name is Carlo Broschi, was one of Italy's greatest male sopranos. By the age of seventeen, he was famous throughout the Country as "il ragazzo" (the boy). Farinelli led a very productive life, serving Italian courts and the Imperial House of Philip V in Spain. In 1770, at the age of sixty-five, he gave audience to another child prodigy, Wolfgang Amadeus Mozart.

Mozart and his father once had occasion to visit the papal city during Holy Week, and heard Allegri's "Miserere" performed at the Sistine Chapel. From this one hearing, Mozart was able to transcribe the entire, coveted score of the celebrated work (with only minor corrections later), and on Good Friday presented it in full to an astonished papal court. Later that year, Mozart was received by Pope Clement XIV, who conferred on the young musician the Order of the Golden Spur (not quite as whimsically concocted as Yorinks' Le Prix de Science), a title that allowed him to be called Signor Cavaliere Amadeo.

January 27, 1756. As we return to the text, on the page where Minski's father scoffs at his young son's infatuation with music, Yorinks begins, "On January 27, in Salzburg, Minski declared, 'Papa! I've done it! . . . One sip of this and I'll be able to sing like . . .'" A quick look into any musical dictionary tells us that Mozart (a name, by the way, not dissimilar in configuration and syllabication to Yorink's Minski) was born in Salzburg on January 27, 1756.

The Requiem Mass. As Minski feverishly works to recapture his original formula, he becomes distraught and bedridden. His many versions of the singing formula have turned him first into a mouse, then a moth, a mop and a chair, and finally confine him to bed; but none of this interrupts his search for the secret formula.

In his last days, as he struggled to complete his "Requiem Mass," Mozart was bedridden, haunted by a vision of a darkly-clad, masked figure who commissioned the piece from him. The maligned Mozart finally succumbed to fatigue and exhaustion. Minski, on the other hand, rises from his confinement in clear exaltation, "I can sing!" He gives singing demonstrations (accompanied by a masked harlequin in shining, white dress) to an appreciative public, and finally is borne upon the shoulders of the townspeople and paraded into the main orchestral hall for a crown performance.

The Genius of It All

On my first reading of **Bravo, Minski**, although the story line satisfied me immediately, I became restless in the face of curiosities left half-baked. I wanted to know more about Franklin and Goddard and Archimedes and Mozart — big people in a big world of big ideas — so I began trekking to the reference section of my library to explore the many clues scattered about the book.

This is the value of literature in general: it broadens our points of view; it stretches our imaginations; it forces us to entertain ideas foreign to our own. **Bravo, Minski**, in particular, brings big thoughts to young (and old) readers in its persistent exploration and manipulation of the known world. Yorinks and Egielski, as masters of the art of allusion, provide a stellar map that expands our frail awareness of world events. For the classroom teacher and gifted education specialist, this map can be an excellent jumping-off point for discussions concerning various facets of cultural history, the history of scientific theory and experimentation, biographical studies, the use of literary devices (i.e., allusions vs. direct reference), and so much more.

Read as a story, **Bravo, Minski** is total entertainment; read as a map, it is a self-reflecting mirror. Although its surface features can stand alone as a story meticulously crafted, its wealth of multiple allusions and direct references deepen its meaning and enrich its content. Because these point unbegrudgingly toward the world of the great minds of Western culture, it is an inspiring and incomparable literary experience for children who are sensitive to their own broadening gifts and talents. Bravo, Yorinks! Bravo, Egielski! **Bravo, Minski!**

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FROM ANTIQUE BOOKS TO WORD PROCESSING: INSPIRING CREATIVITY IN YOUNG GIFTED AUTHORS WITH A WHOLE-LANGUAGE APPROACH

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A sudden rainstorm in Bennington, Vermont was the beginning of an unexpected literary adventure for my language arts students. During our summer vacation, my husband and I were caught in torrential rain while on the main street of this quaint New England town and sought shelter in the warm ambiance of an antique book store whose casual hours are listed as "usually 11 to 4 Wed. - Sat., Mon. and Tues. by chance."

I have always enjoyed looking through antique books, not only because of their uniquely styled print and binding, but because of the hidden treasures that often are found pressed between the yellowed pages. Several years ago, I discovered an original pencil sketch by a Union army soldier which had been pressed between the pages of an 1861 collection of Tennyson poetry. Now, in this little Vermont cubbyhole of a book store, I would discover many more treasures to share with my nine- and ten-year-old gifted students.

I found several poetry collections, the majority of which were published in the late 19th century. For $20.00 and some change — less than the cost of one brand-new basal textbook — I was able to take them all home. I imagined that my students would enjoy looking through them and might, perhaps, find a poem to enjoy or an old newspaper clipping to make them laugh. Little did I realize that these poetry collections would provide great depth of inspiration for students who had formerly shown little interest in poetry of any sort.

WHOLE-LANGUAGE BEGINNINGS

The school year commenced and the books were tucked away until the winter months when we would need new, fresh insight. In the fall, students would be writing stories and plays and would delve into literary criticism of full-length novels. In this classroom of gifted students, a whole-language approach to literature and writing would replace the less-than-inspiring traditional language arts curriculum which often conveys to students that language is a dull series of pieces and parts to be memorized, tested on, and usually forgotten at the end of the school day.

LANGUAGE WITH MEANING

It is good news that the whole-language approach to teaching language arts is finding its way into more classrooms, including many so-called "mainstream" environments. Having taught with conventional, basal-textbook-based methods and whole-language methods, I believe that whole language teaching is a superior teaching method for any classroom, not just for gifted classrooms; however, in many cases, gifted students will *only* respond to whole-language teaching methods. This is because gifted students are more acutely aware of the need for meaning in a learning experience. If a gifted student does not see a reason for studying grammar, spelling, or literary forms, he may quickly lose interest in the processes of language. Gifted high school students may often be heard saying, "I hate English class!" This sentiment is usually the result of years of perceiving "English class" as a dull parade of sentence diagrams, spelling lists, and formal composition assignments.

In a whole-language classroom, skills are learned along the way because they are needed to achieve the goal of creating a story, play, or poem which has genuine meaning for the student author and his audience. The learning vehicle is the process of real reading and writing. Gifted students are often task and project oriented; their need for creative expression must be met through meaningful, goal-oriented language experiences. Hence, more genuine learning and enjoyment of language will occur in a whole-language classroom where creativity is the norm for everyday activity.

LEARNING THE PROCESS THROUGH PROJECTS

Throughout the school year my students were given a series of long-term projects (LTP's). Each of these LTP's had a specific curricular objective, but the resulting projects were surprisingly diverse and often branched into unexpected new projects. Our first project was entitled "Tell Us a Story." Students chose their own topics and were guided through the writing *process* including brainstorming, first drafts, content conferences, editing conferences, and publication. This structure was based on the model from Lucy Caulkin's **The Art of Teaching Writing,** which is an informative and inspiring guide for the beginning and experienced whole-language teacher.

Students were highly motivated by the goal of writing for the ever-responsive audience of their fellow students. Those initially frustrated by "writer's block" were eased past this obstacle when they discovered the joy of sharing writing with their peers in group conferences. These conferences provided opportunities for the teacher to model productive conferencing techniques such as non-judgemental questioning of the author. This questioning method clarifies the meaning of a developing manuscript, while communicating respect for the author's final word in the editing of his work. Conferencing skills were then employed in one-to-one student conferences and further developed in subsequent group conferences. It was not unusual to hear one student correct another's questioning style in a group conference. The correction might sound like this: "Don't say that you LIKED the story — tell her WHAT you liked about it, and why!" Gifted students can quickly develop sophisticated editing skills which truly stretch their higher-level thinking abilities. Editing becomes a creative event in itself as students grow in appreciation of the give and take of editorial conferencing.

During the weeks that students worked on their first LTP, I read aloud to them. Reading aloud is often abandoned after the primary grades, but listening to fine literature can be a meaningful experience through the adult years (as evidenced by the current proliferation of books on tape). After hearing me read **The Cay** by Theodore Taylor, students did not want the book to end. Their response led to an LTP entitled, "Write a sequel to a book that you have read within the last six months." Several students wrote sequels to **The Cay** with the characteristic sensitivity of gifted children; they were saddened by the death of Timothy and resolved that sadness through their creative writing. Some students "resurrected" Timothy by introducing a long-lost son as a new character; others returned to the cay to find him still alive. The sharing of this fine piece of literature led to a variety of responses. Hearing each unique sequel read in our group conferences was no less exciting to us than the opening of gifts on Christmas morning!

MEETING INDIVIDUAL NEEDS THROUGH CHOICES

An imporant aspect of this LTP (and all LTP's in a gifted whole-language classroom) was the fact that students were given a choice of subject matter. Gifted students need choices in their curriculum to allow them to explore their unique ideas, talents, and sometimes unconventional creative directions. One student in this group was uninspired by **The Cay** and chose instead to write a sequel to Robert Louis Stevenson's **Treasure Island.** This highly gifted nine-year-old liked his world to be orderly and well-mannered, so he "polished up" one of his favorite stories until it was more to his liking! In his sequel, entitled "Return to Treasure Island," the main character, Jim Hawkins, tells us, "This time, I was lucky. I got a crew of three hundred and one from the Royal Navy. The crew used Old Spice deodorant, was clean-shaven, and was polite. Obedience was high, too." A further affirmation of the orderliness of the second voyage was evidenced by Jim Hawkins' comment about his new captain's temperance: "After we weighed anchor, the captain took me down to the cabin in the stern (his). We drank water (this guy didn't like alcohol) and talked." What a contrast with the original **Treasure Island**'s cast of characters! This reading-writing connection provided a young author an opportunity to explore ideas that were meaningful to him, and the catalyst was great literature.

POETRY BEGINNINGS WITH ORIGINAL SOURCE MATERIALS

We began our poetry study in late winter. Given the season, it seemed appropriate to start by memorizing Robert Frost's "Stopping by Woods on a Snowy Evening." The old-fashioned practice of memorizing poetry is best begun as a group project, so that students can help and encourage one another as they practice together. Students were told that the memorization of verse was a common practice in 19th century schoolhouses. This led to introducing the antique poetry anthologies from the little book store in Vermont.

The students' assignment was to memorize a poem from one of the antique poetry collections that appeared in the classroom library. They were encouraged to handle the books freely, treating them with care so they would last for everyone to enjoy. Students were enchanted that the books were published in a different century and enthusiastically sought out the copyright dates.

I had not expected the extent to which students would appreciate the aesthetic beauty of the elaborately embossed book covers and the elegant fonts used for printing. They quickly discovered which anthologies had the "best" poems and amiably argued over who would be able to read a favored book next. They delighted in the carefully penned inscriptions written on the inside covers in brown ink, such as "Mary — may you never know a sorrow," and the yellowed newspaper clippings pressed between the pages. One clipping was entitled "The Age of Genius." It listed the names of famous gifted writers and composers, including the surprisingly young ages when they published their great works. According to the article, "At the age of 18 David is said to have written his first Psalm, Shelley wrote 'Queen Mab' and Mendelssohn composed his music for 'A Midsummer Night's Dream.'" What an appropriate discovery for a group of gifted nine- and ten-year-olds! I was ever so grateful for that sudden rainstorm in Vermont that led us to these priceless treasures.

By perusing these antique volumes, the students also gained a better understanding of writing that endures, and that which does not. One student was astonished to discover Edgar Allen Poe's "The Raven" in an 1882 anthology entitled **Treasures from the Poetic World**. He had found the poem in a contemporary anthology a week before, but seeing it published in the antique book gave him a sense of the poem as belonging to classic literature. A less-than-classic anthology, entitled **Drops of Water** and published by the National Temperance Society in 1872, included humorously melodramatic poems about the evils of alcohol. The students, well-grounded in the current "Just Say No" campaign, did not disagree with the message, but recognized the quality of the poetry to be less than enduring.

POETRY WRITING: FORM AND CREATIVE PROCESS

The excitement generated by delving into the antique poetry collections led us to the next step — writing original poetry. I do my own LTP's along with the students, as it enables me to understand their learning processes and conveys that I value creative work enough to do it myself. We began by writing free verse, a genre which was most familiar to the students. We then shared our poems in group conferences. Poetry forms were introduced by reading classic and student-written cinquain, rhyme, haiku, and diamante poems. A student who discovered Ogden Nash poems in an "historic" 1950's anthology taught us the limerick form, which quickly became popular. It was not unusual to see a group of students huddled around a published anthology or a student's just-written poem, reading aloud to one another. This was a language arts teacher's dream!

Here is a limerick written by one of the musically gifted poets who had attended a recorder workshop in Wisconsin:

I'm a very happy soprano,
Who likes to play the piano.
I play the recorder,
Cross the Illinois border,
But I barely have a big enough hand, though.

The beauty of whole-language writing is that it comes directly from the experience of the student. Children can use the inspiration of fine literature forms as a catalyst for their own meaningful writing, adapting forms to their chosen content. Giving latitude in choice of subject matter is essential for the majority of student writing in a gifted whole-language classroom. The subject of the above poem came directly from the student's experience, and the limerick has a personality which might not have surfaced if he had been told, "Today we are going to write about why we love music."

ENVIRONMENTAL EXPERIENCES

Another source of inspiration for creative poetry writing came from experiencing stimulating "environments" through activities such as listening to music or taking a nature walk. One dark, rainy day, we turned down the lights and listened to a recording of the sounds of a rain forest while students wrote poetry. Here is a poem that was written within just a few minutes on that dreary afternoon:

JUNGLE JUNGLE
Jungle jungle shake and rumble
Let me hear your shouts and mumble,
Shake those limbs of yours,
All the rumbles, glooms, and glores.

Animals wild, wierd, and mild,
Pluck your feathers, hair and scales,
Shake your tails
Shout out loud and be all stout.
Jungle jungle shake and rumble.

Nature walks can provide inspiration for poetry. At sunrise one morning, I took a group of my students for a bird watching expedition. The fog was so dense, it appeared as if we might not see any birds at all. The following poem describes what one student experienced as she patiently stood next to a small lake:

SWANS

I stand alone in the misty woods.

Suddenly a flock of swans
  descends from the sky.

They yell their hooting calls
  and spread their Majestic
  wings,

gliding gracefully across the water.

They swim on the lake for awhile
  then flap their wings and
  ascend into the air once more.

A PUBLISHED POETRY COLLECTION

Publication of a class poetry anthology was a natural conclusion of this Long Term Project. Students were responsible for typing poems on the word processor, proofreading, and making layout decisions. Since gifted children are often task-oriented, the goal of writing for publication adds meaning to the creative writing process. Students, who had difficulty completing tasks, achieved new confidence in their abilities when they saw their creative work in print, ready to be enjoyed by their peers. The collection of poems in the anthology was as wonderfully diverse as the group of contributing students and will likely be enjoyed many years from now as these young poets develop a lifelong appreciation for the creative process.

ARE THE SKILLS OF LANGUAGE TAUGHT?

A concern of some whole-language critics is the perception that whole-language teaching emphasizes creativity only, excluding essential mechanical skills such as grammar, punctuation and spelling. If whole-language teaching is done properly and thoroughly, those skills will not only be taught, but they will be retained because the learning process will be a meaningful one. An effective whole-language teacher will have an agenda of skills that need to be learned by students, but these items will likely be taught on an "as needed" basis during the course of a carefully planned curriculum that logically brings forth the need for the skills.

WRITING FOR PUBLICATION: INCENTIVE FOR IMPROVED SKILLS

In our class, writing for publication was the catalyst for polishing some of the necessary mechanical skills of writing. A published anthology of folk tales, fairy tales, and tall tales was the result of an LTP in which students wrote "tales" for entry in a writing contest. All of our process writing skills were used and grammar lessons were incorporated as needed. When gifted students see the need for understanding grammar and spelling, they will learn them with enthusiasm. During this project it became apparent that many students did not understand the rules regarding the placement of commas. We discussed these rules, and students were asked to write sentences which depended on proper comma placement for meaning. Here are some student-written sentences which need *proper* comma placement to bring out the true meaning:

a.) The computer has broken Geoff.
b.) It's time to bake Trevor.
c.) We're having roast, pig!

Sharing these and other "comma-needy" sentences in a student-written worksheet was very entertaining for the students and brought home the lesson of comma placement in a way that was talked about for weeks after the assignment was over. The students' creative input in concocting word puzzles stretched them further than a conventional workbook exercise, and the project paved the way for more student-written grammar fun.

BRILLIANT MINDS UNFURLED

The final product of their writing efforts — the contest-ready tales — were combined into a class anthology. The collection was duplicated and bound, complete with their own illustrations and the following title written by a student author: **Tales From Around The World - Brilliant Minds Unfurled**. One of the contributing students won an award for her tale in a well-respected writing contest, and her classmates graciously celebrated this achievement with her.

Other "prizes" went to each contributor in many forms. New worlds of imagination were discovered by students who were unaccustomed to writing fiction or fantasy. A new student, who suffered from "writer's block" obstacles, completed his tall tale with much encouragement from more confident, "experienced" authors in his class, and was thrilled to have his work included in the anthology. The following year, he received an unexpected bonus for his efforts: A younger student checked out the anthology from the school library and remarked that his tall tale was her favorite story from the collection. When this remark was shared with the author, his delight was enormous! This formerly reluctant writer is now eager to begin new stories and has grown in confidence and ability.

COMPUTERS AND THE CREATIVE PROCESS

Since the thrust of whole-language writing is process oriented, the use of a word processor can be a tremendous boost to the creative process. Word processing simplifies the editing process, since changes in text are a less drastic event. Using a word processor can also build writing confidence if students have handwriting difficulties.

Students perceive more ownership of a published product if *they* have typed it on the word processor, rather than relying on an adult to type it for them. They enjoy adding italics, underlining, and other unique print styles to add emphasis and interest to their writings. Many fine desktop publishing programs are now available for children, giving greater flexibility in layout, design, and illustration of printed products.

Given the opportunity to produce a more polished product, gifted students of any age will skyrocket with word processing and desktop publishing. At our school, students from age five to fourteen have been involved in publishing class newspapers using their classroom computers. They have produced a variety of other written products, such as fiction stories, autobiographies, ads for school plays, and scripts. These have been created using word processing, graphics, and desktop publishing software on school computers.

Each year, students from the computer classes add dozens of "published" books to a special reading corner in the school library. These books are read enthusiastically by students of all ages, establishing these creative writers as genuinely published authors. Examples of creative work from the "authors' corner" have been shared at national educational conferences and with visiting graduate classes.

GREAT LITERATURE: "REAL" READING FOR THE GIFTED

A discussion of creative whole-language teaching for the gifted would not be complete without a look at the importance of the ongoing study of full-length literary works. The role of reading great literature in teaching writing cannot be underestimated. Exposure to fine literature opens up new worlds of thought, builds vocabulary, and teaches style by example. Gifted students are especially receptive to learning from reading, as their highly developed vocabularies attest.

Gifted students benefit from group discussions of literature because they can share questions and insights in a challenging peer environment. Consistent, ongoing reading can be encouraged through the use of a Literature Response Journal (LRJ). Students write in the journal once or twice a week, in response to the book they are reading. The LRJ provides a means for readers to comment on what they are reading *while* they are reading it, and gives students and teachers an opportunity for written dialog about ideas. I never "correct" entries in an LRJ —comments are non-judgemental and include "Aha," "I agree," and "Have you considered . . . ." These journals give students a meaningful, creative outlet for responding to reading without redundant book report summaries.

OUR NEXT GENERATION OF CREATIVE THINKERS

Whole-language learning works effectively and naturally with gifted children, since it is based on expression of one's own life experiences, thoughts, and creativity. All children need to express themselves, and a stimulating learning environment, with sufficient time for thinking, reading, and writing, will improve the quality of their lives as well as contribute to their growth as thinkers, problem solvers, and communicators. Providing original source materials can open new doors for students by exposing them to the best ideas that our traditions have to offer. Gifted children will recognize a good idea, think about it, and improve upon it. Their creative response to a stimulating whole language environment will uplift and transform their thoughts, lives, and contributions to society.

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Publish It! III *Desktop Publishing by TimeWorks*

Print Shop *graphics software by Broderbund*

A WIDE-EYED VIEW OF THE ARTS

Lynn Schornick, Superintendent of Cultural Arts, Waukegan Park District, Waukegan, Illinois

I want to discuss the current status of arts appreciation. I want to explore the reason our educational system is having problems at so many turns. I want to know if a young person who takes spray paint to deface a building is simply desperate for artistic expression. I will not have the opportunity to solve or even understand all of these problems; however, there is a reasonable approach to solutions to some of these problems.

For nearly a decade, I have directed the programs for the Jack Benny Center for the Arts in Waukegan. The Center teaches music, dance, drama, and visual arts to a broad range of participants. As a community arts school, the Jack Benny Center has brought outstanding instruction in these areas to many children and adults. The levels of interest and dedication to the arts are as varied as the faces that pass through our doors. The only exception is the distinguishing glow on the faces of those who have found a true love for their chosen art form. This love is not usually naive nor boastful, but seems to come from within.

I recently was watching a movie called "A Christmas Story." It incorporates many elements of art, mediocrity and false understanding. Written and narrated by Jean Shepard, the movie recalls an early Christmas when Ralphie, the nine-year-old lead, has a burning desire for a Red Rider BB Gun. Ralphie must write a theme paper describing what he wants for Christmas. We see how proud Ralphie feels about his one page epistle — a masterpiece of clarity and style. The teacher gives Ralphie a C+. What a blow!

How did Ralphie grow up to be such a fine author? Did he have a teacher or a friend who sparked an interest in creative writing? When did this transition take place between fourth grade and adulthood? Ralph's ability to mentally conjure up a scene creating his own false reality seemed particularly important to me during the movie. His daydreams were melodramatic, naive and self-involved, rather like most people's day dreams. What seemed most outstanding in the process was his ability to detach himself from what was and shift to what he thought should be, for better or for worse. It was his creativity that leapt out at me. No matter how manipulated, the little vignettes Ralphie dreamed up showed something that is extremely important to becoming an artist. These highly sophisticated daydreams, compared to real life, were like the contrast between full-color, stereo sound movies and black-and-white silent films. This inner "picture" is a skillful tool in the creativity of art. Great engineers and architects have this ability. Michaelangelo in front of a block of solid marble, visualizing the work to be wrought from it, is another example.

Every "artist" I know has an unusually high degree of this inner creative/recreative ability. It is difficult for me to imagine Jean Shepard writing the narrative for his story and not emotionally reliving every pleasant and distressing moment. We all relate to memories of how we felt in certain circumstances. Their reality during recall is what makes them so special.

What, then, of a creative fiction writer? Where does he get his emotional understanding to create a fictitious scenario? We often hear writers being advised to write about things they already know. What of the creative geniuses who create new worlds, new inventions, new impressions? From what dream world does their inspiration come?

I was very recently surprised to find that others are examining the area of daydreams in the creative process. Recent medical research shows that daydreams usually last fourteen seconds and often take place when the mind is not focused on a subject. My contention is that an artist makes use of daydreaming by making it a focus for creativity rather than a by-product of boredom. It can become a major creative tool.

How is it that sensitivity to creation is developed? Can everyone develop that sensitivity? Is it a matter of inherent skill, education, or both? How do we determine the holders of these artistic gifts?

Let me begin with the premise that everyone (pre-school through high school) should participate in the arts. Few would dispute fundamental rights to artistic exposure. For those who do not understand the importance of this exposure, reality often enlightens them. We all learn to read; but too many never learn how to write. Some assimilate what they have read into various personal styles of writing. Others, less gifted in this assimilation, are set adrift in a sea of words, phrases, punctuation, and tenses, which boggle their minds.

It is often in the arts that some show aptitudes which are beyond the norm. To determine the norm and to expose the broadest possible range of people to an art form, everyone must participate. Our education system often punishes those who are not gifted by assigning grades. While grades can be a motivating factor behind achievement, they can also effectively deter artistic (or scholastic) curiosity. For artistically gifted children who are developing their daydream abilities in a classroom, we can find a good way to tap into that creativity and still help them focus on the subjects at hand.

Exposure to a broad range of artistic experiences is essential to determining a norm and to identifying and bringing forth people with inherent gifts. How can one who is unexposed truly appreciate one who is gifted? Without nurturing, how can one who is gifted truly excel?

In the population at-large, there are many persons with artistic talent. There are far fewer who are truly gifted or have exceptional talents. I have found that inability to identify normal artistic standards jeopardizes an understanding or recognition of talent. Those personally exposed to art will begin to appreciate true gifts in others by understanding the difficulty in achieving quality. Recognition of quality varies with ones own experiences. It may take a more finely wrought work of one sculptor to move another sculptor emotionally, than to move a non-sculptor. There may be a piece of genius exhibited in a work which can be understood only by another artist; i.e., success in the use of a difficult medium, a sense of proportion that makes the sculpture live on its own. The degree of our exposure to art helps broaden the measures by which we judge. Why, then, do we expect people to go through a civilized system without that very necessary exposure? Our experiences and exposures are what make us differ in our artistic opinion.

What appeals to us in the form of art is often linked to our experiences. Extreme experience may lead us back to a more "classic" approach. There is obviously a classic range through which the pendulum of artistic nuance swings. It forms a constant standard by which we measure extremes. In art, impressionism may have seemed extreme to many classicists. Yet, today, the works of the great impressionist painters are in the mainstream of classical art. The early 1900's music of Stravinsky was extreme by prevailing standards. Yet, today his music is standard fare. Innovation is part of giftedness. It is beyond learning. It is the conscious and subconscious processing of information, inner fantasy, and exploration that brings us new standards.

What I observed about Ralphie's theme paper was how wonderful he thought it was. His teacher thought it was only slightly above average and gave it a corresponding grade. What if, in spite of its mediocrity, Ralphie's teacher had little or no experience in discerning quality prose? What if, as a teacher, she were unschooled in any creative art? Math is basically absolute, math theory is abstract. Music on a page is subjectively absolute; but its recreation from the page into sound is much more abstract.

Without artistic exposure, there is little or no appreciation for the arts. Without appreciation, the arts lack support aesthetically and financially. Most of us can enjoy an already excellent, exquisite, classical work of art. Who will help build the minds of future artists and foster the creation of such works? I think almost every school in this Country, for budgetary reasons, has cut into arts education and exposure. Assemblies are still held with storytellers, actors, musicians, etc., but the process of exploration is equally important and it is being left out of too many young lives.

Many children are bored with life at a young age. Who can be bored when the beauty of an exquisite poem or book or music or painting is understood? He who looks at beauty with his thought closed sees nothing. Those who have had a good sampling of a variety of arts will at least learn some appreciation. Those who look at an art form and are open to its many depths have found a key to exploration for a lifetime.

DRAWING: A PROCESS OF THINKING

Jeanie Goertz, Professor, Northern Arizona University, Flagstaff, Arizona

Narrowly specialized thinking that equates drawing with art keeps many people, including curriculum planners for gifted programs, from realizing that visual education need not be an education for a life as an artist. Many professionals who are not artists, such as architects, engineers, inventors, mathematicians, geologists, physicists, and sociologists, use drawing as a process to think and communicate more effectively.

As a process of thinking, drawing implies the development of the ability to represent observed three-dimensional objects on a flat two-dimensional surface, and create illusions of volume, depth, and structure. Those illusions are representative of the real world.

For the artist and inventor, Leonardo da Vinci (da Vinci, 1971), the process of drawing was his secret in creating his many inventions and ideas. His notebooks and sketchbooks contain hundreds of detailed drawings of birds, fish, human organs, human figures, and plants. He observed nature in minute detail and imitated it in his inventions. In general, this quality of "seeing knowledge" is difficult to describe in words and is indicated not only in drawings but in design plans, photography, sculpture, and all media of visual expression (Curtiss, 1987).

My intent is to examine drawing as a process of thinking that facilitates creativity and problem solving. As educators, we must incorporate this process of thinking into our curricula to help students become creative innovators and effective problem solvers.

DRAWING AS A PROCESS

Drawing as a process begins with the hand expressing a visual image while the trained eye and mind evaluate the changes within the drawing as it develops. By utilizing the abilities to see and think in a fluid way, it is easy to move from one kind of imagery to another to produce a drawing. For example, when taught in the classroom, the student might see a problem from several angles and, perhaps, even choose to solve it in the direct context of seeing. Now, prepared with visual understanding of the problem, the student thinks of alternative solutions. Rather than trust to memory, the student draws a few quick sketches which can later be evaluated and compared. For the intellectually gifted, this process can improve creativity and accomplishments. For Thomas Alva Edison (1968) this process of drawing was used to generate many ideas. His quick-sketch notebook of ideas helped him create and better understand his many inventions.

EXPRESS/TEST/CYCLE

A strategy to implement the drawing process is the express, test, and cycle (ETC) method. When taught in the classroom, it becomes an instructional method to assist children as they generate ideas.

There are three steps in this drawing process, according to McKim (1980). The student must first express ideas (express), then carefully evaluate (test) ideas, and finally, re-evaluate the ideas by cycling the information gained in testing (cycle).

Most students find the expression of ideas on paper to be the difficult part of the express, test, and cycle method. McKim (1980) suggests four basic principles to help generate ideas on paper.

1. Fluency and flexibility of ideas
2. Deferred judgment
3. Unhesitating response
4. Skill of drawing

The first principle, fluency and flexibility to help the flow of ideas onto the paper, can be traced to J.P. Guilford (1967), a pioneer in the psychology of creativity. It is the quantity of ideas that is important in this process. Flexibility of ideas is expressed by generation of a variety of ideas.

The second idea-generating principle is deferred judgment. This can be achieved by brainstorming, or problem solving to help the flow of ideas. This method, developed by Alex Osborn (1957), is to be used by a small group to generate ideas. Greater fluency of ideas is believed to produce ideas of higher quality. This strategy allows students to explore ideas without judgment or censure. All ideas receive acceptance and consideration. Unusual ideas or take-offs from ideas already suggested are encouraged.

The third principle, unhesitating response, is based on William James' notion that "whenever a movement unhesitatingly and immediately follows upon the idea of it, we have ideo-motor action. We think the act and it is done" (James, 1984). For the student, unhesitatingly sketching responses to each idea creates a momentum in which no ideas are lost. Expression keeps pace with thinking.

Fluent and flexible ideas, deferred judgment, and unhesitating expression of ideas into sketches are important ways to generate ideas; however, without adequate drawing ability, a clumsy sketch may bring judgmental processes that stop the flow of ideas. Ideas that cannot be adequately recorded in sketch form are often lost, and attention devoted to problems of drawing is attention diverted from generating ideas.

Unfortunately, there is no shortcut to acquiring drawing skill; however, careful selection of drawing materials and a well organized and relaxed environment aid in developing the skill of drawing. The best materials for visual thinking are direct, quick, and easy to use. A suggested list follows:

Markers:
- 1 nylon-tip pen (black)
- 1 ballpoint pen (black, medium point)
- 5 Magic Marker or Eagle Prismacolor felt-tip markers (assorted colors)
- 3 Prismacolor pencils (assorted colors)
- 1 Conte stick (black #3)

Paper:
- 1 large newsprint pad (approximately 18" x 24")
- 1 tracing pad (approximately 14" x 17", with one sheet of grid paper)

Eraser:
- 1 Pink Pearl

Tools:
- 1 mat knife
- 1 inexpensive pair of scissors
- 1 wooden ruler with brass insert (24")

Idea sketching is best performed in a state of relaxed attention. Relaxation is important to thinking, because we think with our whole being — our bodies and minds. According to Harold Rugg (1963), "Nothing is more basic than the role of the body. We not only move with it, we think with it, feel with it, imagine with it." While tense muscles divert attention and waste energy, a totally relaxed person cannot think at all, even though awake. Physiologists have shown that some muscular tension is required to attend mental processes — some tension, but not too much: relaxed attention.

Finally, practice making thumbnail sketches to improve skills. Lockhard (1977) says, "If you would learn to draw, hold the (drawing) instrument often — and hold it with your head."

Once students have expressed a number of ideas in their sketchbooks, they are ready to test ETC. Testing involves (a) seeing sketches fully and imaginatively, (b) comparing sketches, (c) evaluating each idea in relation to present criteria, and (d) developing new criteria. As students compare their idea sketches, they automatically begin to evaluate them. Have them make written notes and sketches immediately. Use a different colored marker (red) to denote the test phase. The act of putting your evaluations into writing encourages a thorough review, reinforces a critical viewpoint, and assures that judgments are not forgotten.

The first cycle of idea-sketching rarely produces an idea that fully meets the students' test. After evaluating their first concepts, the students are ready to return to idea-sketching. It is a return with an idea-generating strategy in mind. One strategy might be to develop a particular concept in detail or to generate more ideas before delving into detail with one. Once the student has chosen a strategy and entered again into the express phase of ETC, remember the principle of deferred judgment. Do not attempt to judge whether the strategy is working; have the students focus their attention upon generating ideas and continue through the cycle.

ACTIVITIES FOR STUDENTS TO DEVELOP INDIVIDUAL STYLE

Visual Brainstorming

Brainstorming is an idea-generating activity that can be performed individually or in a group. Although brainstorming is usually verbal, it can also take other forms: a dancer can brainstorm directly in dancing, a composer can brainstorm musically, and a visual thinker can brainstorm visually.

Directions for students: Choose a problem of interest and generate a series of thumbnail idea sketches on that problem. Set a quantity goal (e.g., 20 sketches in 60 minutes) and keep a tally of every time you find yourself judging an idea while brainstorming.

Idea Log

An idea log can be made on sheets of paper or index cards for easy comparison. It can be a long scroll or a booklet.

Directions for students: Make a log in which to record your ideas. Keep the log with you at all times, to facilitate the recording of ideas.

Critique

As students view idea sketches, have them attempt to see the sketches as fully and imaginatively as possible, re-centering the way they see into a variety of viewpoints. Encourage them to formulate new understanding of problem criteria in writing.

Directions for students: Place idea sketches on a wall, table or floor. Step back (as a group) for an overview; turn some of them upside-down and critically look at the entire display. Move them out of the order in which they were expressed and into new positions. Use a different-colored marker to record evaluations, comments and ideas.

Evaluation

Students reported that using ETC at first seemed unnatural and almost mechanical; however, with practice, it became a natural way to generate ideas. Students liked being their own audience; that is, their sketches were not intended to communicate ideas to others but were quick, spontaneous sketches made without concern about whether they would be understood by others. One student reported that he felt free to fail several times before coming to a solution. The effectiveness of developing creative and innovative ideas was evidenced by students sharing sketchbook ideas with teachers and other students.

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A CASE FOR ARTS EDUCATION

Joe Boyer, Teacher of Art, Long Beach, California

I have a rather simplified view on the expression of creativity and creative thinking: The very nature of creativity is universally evident in all people and is constant; the variant is their personal recognition of their particular channels of creative expression.

This view is rooted in hundreds of hours of observing children and adults in my art classes and working with a variety of adults on imaginative projects. For the past eight years, I have also worked with high school students and senior citizens in the classroom and the community. Through these experiences, I have found that what I really do as an art teacher is create situations or theoretical problems, which groups of people solve either individually or collectively. Problem solving is a large part of the creative process.

As I talk to adults, or eavesdrop on conversations at art galleries, museums, or social gatherings, I find that the underlying concern with regard to creativity, or the lack of it, is nothing more than exaggerated fear of the artistic unknown. Many individuals have gone through life avoiding work that would tap their creative intellect. Many are greatly intimidated by the nature of art, and get bogged down by an enervated sense of frustration. It seems, in many cases, that they have a vision of what they want to create or accomplish, but lack the problem-solving skills, which they refer to as talent, to know how to set about achieving it. The degree of their frustration is partly based on what they regard, or revere, as art. With so much good art available for us to see today, even those who claim to have no talent should be able to find artistic styles with which they can identify or feel comfortable. Our global cultures provide unlimited visual resources for us to appreciate and emulate.

If we allow ourselves to think back to our very first school experiences, we recall that each of us, even the greatest mathematician, statesman, and hero, had to face the grand task of learning how to approach problems and solve them — the process of learning. Art can be perceived as one grand problem, which is solved, usually individually, with a vast array of techniques.

In my classroom, students are deliberately confronted with this task; but whether a student is able to draw a straight line or feels more comfortable with curved lines, is purely personal. The "straight line" yardstick, and all the humor and testimony in its regard, is an earmark for what many people accept as their particular artistic inadequacies. The old adage, "I can't even draw a straight line" echoes the resounding cry of an age filled with great personal artistic frustration. We wonder how this infamous "straight line" came to be and remain the sole yardstick for measuring artistic ability, talent and vision for so many years. The concept is ludicrous and altogether invalid. The integrity of a drawn line owes no allegiance to any particular form of artistic style; rather, it bends harmoniously with the natural flow of man's inspired vision.

Students who spend much time with me soon realize that there is room for everyone's particular style or technique. Everyone draws differently than his neighbor, and among recognized artists this has always been a great source of inspiration and admiration. Of course, there have been cases when artists have forged their way into new and unclaimed territory and found themselves, because of this newer vision, left out of the limelight or even rejected by the public or their peers. A group of traditional French artists, under the leadership of Claude Monet (1840-1926), changed forever the look of art. It was this group of "impressionists" who, for the first time in the history of artistic expression, moved out of the studio into the country and attempted to capture, on canvas, a single moment, a wisp of time, a glint of light before it passed. Traditional opinion and conservative public judgment of the day ridiculed and maligned this progressive style, causing much personal grief and frustration for these maverick artists.

In the art classrooms of today, students are encouraged to explore a wide variety of artistic styles to express their vision. There are students who produce very delicate and intricate "solutions" to what we are doing, and there are those who load their canvasses or crowd their papers with a multitude of lines, shapes, colors, etc. Through a series of sequential lessons, all of these students learn to work with the technical mechanics of composition and color. Books, posters, films, video programs and class lectures place a pool of problem-solving techniques at their fingertips and enlarge their sense of how to express their individual ideas and vision.

I usually begin each class with a series of short exercises. These set the tone for all my courses, whether we are beginning a survey of the arts or learning advanced drawing and painting. We spend a few days looking at a variety of posterized paintings I have pinned to the wall in chronological order. There is discussion with regard to the particulars of composition, and the students attempt to define, to the best of their current abilities, the terms presented to them.

After spending some time discussing the horizon and the effects the vanishing point has on compositional movement, we switch gears, to a discussion of the mood effects dictated by an artist's conscious or unconscious selection of color. From this juncture, we discuss subject matter and style. Students are then given several forms (condensed at the end of this article), which I use as springboards to further class discussions.

The discussion of historical imagery has had a very positive effect on young artists; however, it is important to display a wide variety of images, from Renaissance works through the great abstract expressionists and the photorealists and surrealists of this decade. Often, when a student glimpses the rich historical heritage which preceded him, he becomes more relaxed with his work and reaches a point of optimum creativity. Students who enter my classes with a history of bad or frustrating experiences in art education often complete them with a new appreciation for art, for having learned what it looks like, and especially for having achieved what they had thought was impossible.

I am gravely concerned for those who never brave the great unknown. Thousands of students in this Country pursue mainstream academics with the logical aspiration of making for themselves a secure, successful financial future. This is where we have a breakdown in the American form of education. I have found great differences in the approach to art when comparing our current orientation with that of the Europeans. Through my extensive travels in Europe, I have met and talked with a variety of students and adults and I continue to be impressed with the depth of their cultural, artistic knowledge. The European student of the twentieth century is provided with a variety of cultural experiences — *required* cultural experiences — which are intended to perfect and complete his educational experiences. Unlike the Europeans, we soft-pedal the arts and replace them with a series of expanded core curriculum courses designed to interface with the entrance requirements of higher education.

I have heard countless testimonies from my students and friends about their concern for art and its place in American culture. In a society based on individual freedoms, how ironic that we find increasingly fewer opportunities, and so little time, to travel down creative roads to personal or creative problem solving.

The school setting is an ideal proving ground for the creative process. Art education, in all its phases, is a sound environment, a profitable investment for the many future challenges which will face our global community. The creative drive, inherent to all humanity, needs to be developed, expressed, and understood by all humanity. A balance between the arts and sciences must be achieved, strengthened and preserved. Education must include a full spectrum of experiences for our young people, for if the current imbalance continues, we run the risk of sacrificing the thinking processes which will be needed to effectively solve our future problems.

We, in art education, have a vitally important job — the responsibility of explaining what art is and why people "do" it. We are the keepers and preservers of our global cultures, the storytellers for future generations. This job is not easy, for the road is winding and steep and full of obstructions. Young people follow the examples of parents and teachers. If educational systems were advanced and appropriate course offerings made available and required, art would receive the interest, respect and understanding that it deserves in our schools, our Country and in the world.

Part of my job is to assist students in broadening their artistic bases — to explain history through image. One of my primary goals is to expose students to a variety of methods and media germane to the arts, with emphases on historical and cultural diversities. To teach the various ways in which an artist approaches the subject of his painting or drawing, I use historical examples. Practice, instruction, and more practice help a student improve. One course in art per lifetime, way back in a student's elementary school experience, is a ridiculous reality of this day.

There is much talk about students who excel in the area of art. There is actually research to back up the theory that some students have natural talent and others don't. Art is not limited, nor is the capacity for human expression of it, nor should art or its students be categorized into neat little niches convenient for analytical observation. Teachers of art consider this aspect of human expression to be sacred and eternal. It is not easy for them to listen to what is said by some state boards of education these days. Unfortunately, somewhat due to a history of having had their opinions stifled, art instructors often take a laid-back approach to expressing their concerns about what they accurately deem a vital, critical part of our national and international educational curriculum. Perhaps those who take lightly the role of art in primary and secondary education are creatively frustrated students of long ago who chose paths of academic solitude.

Years from now, we may wake up, as we do with other world issues when they become ominous enough, and say to ourselves, "What has happened to all the creative thinkers we used to have?" Students need resources and opportunities to develop their critical and creative thinking skills more thoroughly. As a career guidance teacher some years ago, I discovered that countless employers in all types of business across the Country were complaining about their employees' lack of vision and inability to imagine solutions to corporate problems. In my travels of late, I hear the same complaint being echoed.

In recent years, a number of states have revised their individual frameworks to include art as a required subject. Those involved with the development of balanced curriculum have worked hard to support and lobby for art education. Although the emphasis on education and the consideration for art as a standard curriculum component are being supported at these and other state and national levels, a problem lies in the fact that the opportunities born of this support are not given to these impoverished students on a consistent basis, nor are the art curricula always adequate to provide the needed balance.

The wisdom of students of the twenty-first century and their ability to deal effectively with the problems their society will encounter depend on the wisdom and vision of today's leaders and workers in the field of education and their ability to solve this problem of deficiency in art education. Students respect that which they deem important in their lives. It is unfortunate that an ongoing battle involving academic requirement, economics and political process determines their current level of respect for the arts, the essence of which gets lost somewhere in the smoke. School art programs are suffering due to this conflict. I have personally weathered the impact of declining interest and enrollment in art classes.

In my earlier remarks about class discussions with regard to artists and their art, I said that much can be learned from studying the technical aspects of a series of paintings; but there are other important lessons to be learned. The histories of many great civilizations and cultures are illustrated by their visual, written or performing arts. To my knowledge, there is no student text — on any subject — that does not include in it paintings, photographs, or charts designed or created by artists.

Art education is a building process. The effect this has on students is that, through their examination of historical development, much like that of the collective math process, they learn how to draw from past lessons to build more complex compositions apropos to specific projects or problems.

In an attempt to stimulate this sort of thinking, I follow a process of teaching critical and creative thinking commonly utilized by teachers who work at embracing the technical fundamentals of any medium of artistic or intellectual expression. As in any English class or math class, there are a logical introduction or beginning, a sketch or middle, the application of materials, the conclusion, product or answer, and the finishing touches, details or reaffirming.

In a society based on economic excellence, we have learned that much hard work is necessary to succeed in our ever widening technical arena. Students are increasingly aware of the need to be well educated; the competition is fierce. There are countless success stories and many individuals to look up to as examples and leaders, for inspiration and purpose for all this effort; but we must remember that the harbinger of this critical concern and study is our personal, creative vision. Those who are allowed, required, or desire to develop the creative aspects of their individual capacities will be at the hubs and wheels of our social, economic, and political systems, because they will be the thinkers.

EXHIBIT A

Instructions: Answer the questions below to the best of your ability. Please print your answers in the spaces provided and be prepared to switch papers with your neighbors and read their answers aloud to the class.

1. What is ART? ____________________
2. Name three forms of ART ____________________
3. What is 2-D (Dimensional) ART? ____________________
4. What is 3-D (Dimensional) ART? ____________________
5. Where does ART come from? ____________________
6. Why are some people so afraid to express themselves artistically? ____________________
7. Why do the people who do ART do it? ____________________
8. What is an amateur artist? ____________________
9. What is a professional artist? ____________________
10. What does ART express? (Name 5 things)
    A. ____________________
    B. ____________________
    C. ____________________
    D. ____________________
    E. ____________________
11. What talents, abilities, help to make up a good artist? (Name 5)
    A. ____________________
    B. ____________________
    C. ____________________
    D. ____________________
    E. ____________________
12. Describe what good ART looks like ____________________
13. Describe what bad ART looks like ____________________
14. What makes a person a good judge of ART? ____________________

15. How does the ART of an artist become popular?______
16. What is an artist's STYLE? ______
17. List five things that would effect an artist's STYLE
    A. ______
    B. ______
    C. ______
    D. ______
    E. ______
18. What makes some ART priceless (beyond price)? ______
19. Name a piece of ART which you know is priceless ______
20. Name two famous paintings you have seen or have studied during your lifetime.
    A. Name of artist______
       Artistic period______
       Artistic style ______
       Title of painting ______
       Present location of painting ______
    B. Name of artist______
       Artistic period______
       Artistic style ______
       Title of painting ______
       Present location of painting ______
21. List five (5) objects you own which were designed by an artist
    1. ______
    2. ______
    3. ______
    4. ______
    5. ______
22. What would this world be like if there were no artists and all that you know that exists was created without a consideration for beauty?______
23. Some people refer to artists as "starving artists." What does this title mean to you?______
24. What makes an artist more interested in the DOING of ART than the MONEY he or she gains from it? ______
25. Name three types of artists who can make a good living doing what they do best, being creative.
    1. ______
    2. ______
    3. ______
26. What makes a person a good, accurate, judge of ART?
______

EXHIBIT B

Instructions: In the space provided below answer the questions as they relate to the three paintings you see hanging on the wall.

1. ______ is the painting you have chosen as your favorite choice for this REACTION REPORT
2. Why did you select this particular painting as your favorite choice for this exercise?______
3. Describe the subject (central character/s) included in this painting ______
4. What type of colors did this artist choose to use when painting this painting (hot, cool, primary, secondary, tertiary, analogous, etc.)?______
5. What type of painting style did this artist choose to use when thinking up this painting (realistic, abstract, expressionistic, nonobjective)? ______
6. Describe the central THEME of this painting (what is the artist trying to tell you about his purpose for painting this painting?)______
7. Why did you select this painting over the other two choices?
______
8. Which painting would you choose to be your second choice? ______ Why did you make this choice? ______
9. Which painting would you choose to be your third choice? ______ Why did you make this choice? ______
10. Would you, and how would you, improve on your first choice of paintings? ______
11. List three (3) other things you feel helped make up your mind when you were selecting your first choice of paintings for this exercise
    1. ______
    2. ______
    3. ______

EXHIBIT C

TELL ME ABOUT THIS PAINTING:

1. What is the central theme or story being told here? ______
2. What mood or feeling is this artist trying to give to the viewer? ______
3. The central (main) theme of this painting falls into what general category?
    a. ______ Historical
    b. ______ Mythological
    c. ______ Portrait
    d. ______ Landscape
    e. ______ Other______
4. Do you think that the artist did a good job at telling the story he/she told? Why?
    ______ Yes
    ______ No
    Why?______
5. Is color a very important aspect (feature) of this painting? Why?
    ______ Yes
    ______ No
    Why?______
6. Describe (write about) your favorite aspect (part) of this painting. Be sure to explain WHY you feel this way. ______
7. Describe (write about) what aspect (part) of this painting you do not care for. Be sure to explain WHY you feel this way.
______

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REFORM: THE PLIGHT OF THE GIFTED

excerpted from "The Perils of Reform", by Edmund B. Hunt,
Coordinator of Gifted Education, Northeastern Illinois University, Chicago, Illinois

THE GIFTED IN HAZARD

"To reform" an institution means to change it for the better, to improve it, or to remove some abuse or impediment. It implies progress or improvement in the institution so that it functions better to achieve its objectives. "Reform in education" is unique in that it may not mean progress or improvement in all areas. Some reform proposals actually advocate retrograde movement of many students.

Hidden between the lines of many current proposals for reform is the requirement that gifted and talented students forgo an appropriate education in order to effect a better education for their non-gifted classmates. Many so-called reforms are actually conservative or even reactionary responses to social and cultural events of the past fifty years. These proposals use the terminology and facade of progressive reform in attempt to regress to an earlier, fantastic period of golden bliss, achievement and contentment. Education could return to a time when gifted students spent all day in the regular classroom, working, not at their own paces in curriculums designed to meet their individual needs, but as unpaid, untrained and perhaps unwilling teachers' aides and peer tutors.

While some reforms are genuine attempts to improve teaching and education by "empowering" teachers, by "professionalizing" teaching, by "restructuring" education through on-site management and responsibility, and by finally junking the old "factory efficiency" model of educational administration; other so-called reforms are calculated ploys to return to the "golden age" of the nineteenth century, a pre-Progressive era of bucolic heterogeneity when everyone in a public school was in the same classroom, learning the same thing at the same time in the same way, each helping another, in a little red schoolhouse presided over by one kindly teacher.

THE REGULAR EDUCATION INITIATIVE

The emphasis in PL 94-142, The Education of All Handicapped Children Act, is on the procedures for the delivery of services to a child who meets the eligibility criteria for exceptionality. While this has meant that school districts can be held accountable for compliance with the guidelines, it has also meant, in practice, that special education has tended to focus on the setting in which instruction occurs, rather than on the features of instruction that allow an exceptional child to learn successfully (Finn and Resnick, 1984). Critics have also charged that the current system has produced a "disabling view of the disabled" which adversely affects expectations regarding their academic achievement.

HETEROGENEOUS GROUPING

Oakes (1985) has attacked ability grouping as a means by which the upper-class elite in the public schools perpetuate their privileges and maintain social inequality. She says that eliminating ability grouping would not destroy excellence in education, but would actually improve it, especially if schools used approaches like cooperative education to replace tracking. She rejects the four "assumptions" (an assumption being a widespread belief that is accepted as true without proof) that she feels underlie the general practices of ability grouping and tracking:

1. Students learn better when they are grouped with children like themselves.

"Simply not true," says Oakes. Putting students together who know the same things, learn at the same rate and expect to have the same futures, or homogeneously grouping them, "doesn't help anyone consistently learn better," she propounds. Some studies show that gifted students benefit in certain areas from homogeneous grouping, but most studies show only the absence of benefits and/or the negative effects for average and slow learners. Oakes asserts that gifted students are not held back in the regular classroom and that handicapped students are not more easily helped outside the regular classroom. With this, she rejects the basis for all special and gifted education.

2. Students, especially the slower ones, feel better about themselves and their abilities when they are grouped with others like themselves.

Wrong again, says Oakes, because tracking itself causes these students to develop low self-esteem. Students eligible for lower tracking placement participate in fewer extracurricular activities, exhibit more misconduct, have higher drop-out rates and are more alienated from school. According to Oakes, these attitudes and behaviors are no longer attributable to factors such as emotional, family or community problems, but moreso to the tracking placements in which these students find themselves.

3. Tracking placements are appropriate, accurate and fair.

Believing this, says Oakes, requires believing that standardized testing, teacher/counselor recommendations and student/parent choices are also appropriate, accurate and fair. Since there are problems with the fairness of standardized tests and with the accuracy and fairness of teacher and counselor recommendations, there are, she surmises, problems with placement procedures.

Oakes argues that disadvantaged and minority children are unfairly and inappropriately placed because the selection system works against them.

4. It is easier to meet individual needs and to manage general classroom instruction in homogeneous groups than it is in heterogeneous groups.

Even Oakes finds it difficult to set this one aside. She suggests ways to manage heterogeneous classes, such as cooperative learning arrangements, but she "cannot suggest anything quite as easy as working only with the top kids." Apparently, Oakes knows very little about meeting the needs of gifted students! How can we assume that she knows what she is talking about when she mentions other special populations?

Peterson, Wilkerson and Hallinan (1984) summarized the research on grouping and came to several conclusions:

1. The most common basis for instructional grouping is ability level.

Tracking by ability is fairly common on the secondary level and frequently used on the elementary level, as with in-class reading and math groups. When they have a choice, teachers seldom group students together who have varying levels of ability. Even if they try to group according to other characteristics, such as gender, ethnicity, SES or friendship preferences, they will do so within the ability groupings. They attempt to create groups of children with similar abilities, because doing so facilitates teaching and learning.

2. Assignment of students to tracks or within-class groups is often independent of individual students' abilities or achievements.

The distribution of abilities within a class is determined by the range of the abilities available to be grouped. The wider the distribution, the greater the heterogeneity of the groups formed within the class. Group homogeneity and mean achievement vary across classes, so students in groups of equivalent levels from different classes may not be individually equivalent in ability or achievement. Factors, such as availability of teaching resources and materials and requirements for equal instructional time, limit the number of groups to about three or four in most classrooms, regardless of the heterogeneity of the students or their varying rates of progress over the school year. Assignment to a particular group is a relative designation that may actually depend on factors other than the student's ability or achievement (Hallinan and Sorensen, 1983).

3. The manner and means of instruction vary among tracks and groups.

In low tracks and groups, teachers present material more slowly and more time is spent off-task for disciplinary and administrative reasons. Teachers do not teach as well, spend less time preparing, and use less interesting and challenging materials.

4. The overall behavior of students varies among tracks and groups.

As the level of the group decreases, the frequency of off-track behavior increases. Students in the lower tracks and groups are more disruptive, interrupt and reject teaching more and have less task-oriented interactions with the teacher and with one another.

5. Social status varies among groups and tracks.

Students in higher level tracks and groups have higher social status than students in the lower tracks and groups. Social influence and power are connected with academic status, especially in situations where academic ability is valued.

6. Students in low tracks or groups are prevented from learning.

Although tracking and grouping benefits higher level students, what happens to students after they are placed in low groups depresses their further academic growth.

According to Peterson, Wilkerson and Hallinan (1984), it is not so much being placed in the lower track, per se, that debilitates the student; it is the atmosphere and consequences that accompany that placement. The differences in the quality of teaching and of educational materials, in the learning climate of the classroom, in the expectations of the teachers and students, and in the social behavior of the students in the various levels, explain the negative consequences associated with lower level placement. Changing these parameters is feasible and might make placement in lower levels less disadvantageous. Conversely, changing the components of placement would be as difficult as changing the perspective that some tracks are "high" and others, "low," as was a similar attempt to change "remedial" education to "special" education. The labels still carry pejorative connotations, even after years of trying to educate and change public perceptions.

Peterson, Wilkerson and Hallinan suggest several means of eliminating some of the worst disadvantages for students in the lower tracks and groups.

1. Students should be assigned to new groups or tracks as soon as their performances warrant it.
2. Teaching should be of uniform quality across tracks and groups.
3. Placement personnel should be keenly aware of students' sensitivity to social status when placing them in peer working groups.
4. Labeling students by their track or group assignments is inappropriate and should never happen.
5. Teachers need to be made aware of the unintended, negative consequences of tracking, grouping and labeling.

PEER TUTORING

If ability grouping is seen as a bad idea that causes some students to fail who would otherwise pass, then heterogeneous grouping is seen as a natural remedy. One of the so-called benefits of mixed ability level grouping is that the better students can be used to teach and tutor the poorer or slower students. This peer tutoring was commonly used in the nineteenth century and even later in rural areas, where the total number of students was low and age or ability groups could not be placed in separate rooms. Some proponents of the current reforms, who believe that the success of the little red schoolhouse was due to its communal, cooperative atmosphere, fail to realize that the degree of success was in proportion to the ability of the teachers and students to overcome the practical constraints placed on them. Wagner (1982) summarized the nostalgic attention numerous writers and reformers have accorded peer tutoring *a la* the little red schoolhouses of yore. She quotes Lippitt and Lippitt (1968):

> Teachers in one-room schools often called upon their older students to help teach the younger ones. They did so in the hope that the younger children would benefit from the extra attention and help they got from their tutors and that the older ones, proud to be cast as assistant teachers, would be motivated to improve their own school work.

Thelen (1969) tried to emphasize how natural and common peer tutoring is when he said, "Friends have always done some homework together . . . The 'little red schoolhouse,' in which six to twenty students of all ages studied in one room presided over by a single teacher, relied heavily on students learning from one another-if only by eavesdropping on one another's recitations." Tyler (1975) recounts how peer tutoring had been a way for teachers to manage unmanageable work loads in the past: "In an earlier period, the one-room school depended heavily upon cross-age teaching since the teacher could not manage alone the educational experiences in all the elementary school subjects for several grade levels." Johnson and Johnson's (1974) review of research about comparative benefits of cooperation over competition showed that it ". . . clearly indicates that the most desirable goal structure for promoting achievement in problem solving tasks is a cooperative one." In **Learning Together and Alone** (1975), they make it clear that by cooperative education they mean an elaborate system of peer tutoring in which the more able students are placed in situations where they are expected and even required to teach the less able students. They list these advantages of peer tutoring:

1. Peer tutors are often effective in teaching children who do not respond well to adults.
2. Peer tutoring can develop a deep bond of friendship between the tutor and the person being helped, the result of which is very important for integrating slow learners into the group.
3. Peer tutoring takes pressure off the teacher by allowing her to teach a large group of students; at the same time, it allows the slow learners the individual attention they need.
4. The tutors benefit by learning to teach, a general skill that can be very useful in adult society.
5. Peer tutoring happens spontaneously under cooperative conditions, so the teacher does not have to organize and manage it in a formal, continuing way.

Buckholdt and Wodarski (1978) also listed benefits associated with peer tutoring based on various research studies.

1. Peer teaching can reduce anxiety caused by vast differences in age, status, and background among students and teachers. A peer tutor may possibly communicate more easily with a student, particularly a slow one.
2. More individualized instruction is possible.
3. The tutor may increase his own understanding as well as self-esteem and self-confidence.
4. Additional motivation for learning may come through peer teaching.
5. Peer tutors might be more patient with slow learners.
6. Peer teaching reinforces previous learning, may reorganize knowledge more effectively and increases understanding.

When Sharan (1960) reviewed the results of five methods of small group learning, or, as Slavin (1980) would call them, five forms of cooperative education, he included Aronson's (Aronson, et al., 1978) Jigsaw Classroom, DeVries' (DeVries and Slavin, 1978) Teams-Games-Tournaments, Slavin's (1990) Student Teams and Academic Divisions, Sharan's (Sharan and Sharan, 1976) Small-Group Teaching, and the Johnsons' (Johnson and Johnson, 1986) cooperative learning teaching methods. Sharan found that the cooperative learning methods showed positive results which included higher academic achievement, increased helping behaviors among the students, and improved ethnic relations. Devin-Sheehan, Feldman, and Allen

(1976) concluded in their review of research that ". . . from the evidence presented . . . several different kinds of tutoring programs can effectively improve academic performance of tutees and, in some cases, that of tutors as well." Dillner (1971) found diverse research evidence that tutors experienced attitudinal changes, showed positive identification with the role of teacher, derived satisfaction from helping others, reached students that teachers could not, gained in reading scores, improved their language skills, demonstrated more interest in school, attended school more often, and got better grades.

If the arguments against grouping and tracking can be used to justify placing as many students as possible in the mainstream, then one of the ways that the "reform" can be made to work is to use peer tutors to work with the many students who will need additional attention. The reform ideas of cooperative education, going back to "the little red schoolhouse," and the Regular Education Initiative all come together on the issue of peer tutoring. Cooperative education (Slavin, 1990) requires that students tutor one another in the work groups that are formed within the heterogeneously grouped classroom. The "little red schoolhouse" ideal of Goodlad (Goodlad and Oakes, 1988) and Oakes (1985) requires that children all be placed together in a single classroom and that the regular classroom teacher be "empowered" to teach all of the children: normal, gifted and handicapped. The Stainbacks, who propose placing even the most severly handicapped students in the regular classroom, have long been advocates of peer tutoring as a means to provide individualized instruction in the regular classroom (Stainback, Stainback and Lichtward, 1975). Alan Gartner, another strong proponent of the REI, has also long advocated the use of students to teach students and learning by teaching (Gartner, Kohler, and Riessman, 1971).

Peer tutoring is the means of making these ideas work, because a single classroom teacher would need some kind of assistance serving the needs of the broad distribution of students in this "integrated" classroom. The most likely candidates for peer tutors, or unpaid, untrained teaching assistants, are the gifted students, who would not receive a differential education suited to their particular needs, but who would indirectly benefit from tutoring the slower students or the handicapped students. This is how gifted students were used in the past in heterogeneously grouped classrooms, before research studies showed that they benefitted more from an education tailored to their intellectual skills (Marland, 1979). That these current reforms seem to be made or broken on the backs of gifted students, who are to be drafted as peer tutors, raises the question of whether a reform movement that benefits everyone except the group that its success depends on can itself be successful. Whether gifted students and their parents will realize and accept their roles as midwives to the progress of others, while possibly forgoing full development of their own potential, remains to be seen.

While an impressive body of research does show benefits for the tutors of younger or slower students, very little work has been done to compare the benefits the tutor would have derived from spending the same amount of time in an appropriate program designed to serve his specific academic and social needs. Until it can be demonstrated that a gifted student will derive the same benefits and academic progress from participating in a tutoring program within regular school hours as he would from participating in an appropriate gifted program, the use of gifted students as tutors during their learning time has to be seen as unfair to them, even though they may derive some incidental benefits from tutoring. If gifted students learned as much from tutoring as from participating in a competent gifted program, then it would be necessary to question the rationale for having any gifted program. If the justification for gifted education is its differential aspect, both qualitatively and quantitatively, then, if tutoring produces the same results, gifted education could not be justified. The time and effort that abler students invest in tutoring would have to be shown to result in benefits at least equal to those spending the same amount of school time working in appropriate classrooms. If the abler student benefits equally or more from tutoring, there is no justification for gifted education. If the abler student benefits less, then there is no justification for taking his classroom time from him for the advantage of other students. Classroom reforms, like cooperative education, the REI, homogeneous grouping, and peer tutoring, whose success depends, not on putting additional personnel and equipment in the regular classroom to assist the regular classroom teacher, but on the recruitment of unwilling or unwitting abler students or gifted students, are essentially unfair to the gifted student. If reforms bring additional professional personnel, new technological equipment and new funding, then they will be to everyone's advantage and will be welcomed enthusiastically by everyone concerned.

DOUBLE JEOPARDY

Gifted education essentially involves acceleration, enrichment and/or grouping as the means of differentiating the gifted program and curriculum from the regular program and curriculum (Kaplan, 1979). Enrichment, the most common form of gifted programming, can be almost anything not available in the regular curriculum, and can be provided in a separate setting or in the regular classroom, although the latter is a less satisfactory arrangement. Acceleration is presentation of the curriculum at a faster pace, in a broader scope, with greater depth, and at an earlier point in the student's academic career. Grouping means placing gifted students with their intellectual peers so that they can be mutually challenged and stimulated, by the curriculum and by one another (Fiedler-Brand, et. al., 1990). The REI and other proposed reforms of a similar nature directly counter the purpose of all three forms of differentiated programming for gifted students. Since education would have to occur in the regular classroom, any acceleration, enrichment or grouping of students with higher abilities would have to take place within that classroom, where by definition there would be a small number of gifted children in relation to the total number of children in the class. They would not be working with their intellectual peers most of the time, since this very point is the anathema with the REI reformers. Any acceleration that was provided would have to be provided individually, because of the size of the gifted group and because each gifted child has a unique profile of abilities that would benefit from acceleration. Enrichment is the easiest and most likely available form of differentiation, but it is also the most likely to be irrelevant to the individual needs of the gifted students and insufficiently challenging to maintain their interests. (Cox, 1985).

There is no doubt that, as the REI is to be interpreted in Illinois, there are to be few, if any, special gifted programs or gifted schools. Although he has requested a 152% increase in gifted funding over the next five years, Robert Leininger, the state superintendent of public instruction, has said, "We need to do away with vocational education in this state. We need to do away with gifted education in this state." (NIPCGE, 1990). It is also clear that, as the REI is interpreted in many school districts, the vast majority of handicapped students are going to be placed back in the regular classrooms. In a spring, 1990 article in the Illinois Council for Exceptional Children **Quarterly**, Freagon, Kincaid, and Keiser (1990) explained what they meant by "One Educational System for **All** Including Children and Youth with Severe Intellectual Disabilities and/or Multiple Handicaps." Vergason and Anderegg (1990) respond to Sontag's (1989) plans for the REI in Illinois with grave reservations:

> In the REI literature, we could find no ideas which could be translated directly into instructional activities and we saw no mention of a research base either preceding or resulting from the implementation . . . It appears, in our view, that the Initiative in Illinois might be described better as a Regular Education Invasion. The difference between the

> two, initiative and invasion, has to do with ownership. Apparently, ownership of REI in Illinois has been vested at an administrative level, despite resistance from the educators charged with its implementation. (p. 10)

There does exist a rich and convincing research base to find the best among the forms of gifted education that use acceleration, enrichment, and grouping. This fact seems to be conveniently ignored in the rush to place all students in the regular classroom. Since the 1920's, when Terman's group (Terman, 1925, 1954; Terman and Oden, 1947, 1951, 1959; Cox, 1926) identified the gifted as individuals who could be differentiated from the normal population, there have been concerted efforts by educators and parents to provide appropriate education for these gifted. (Getzels and Jackson, 1962' Marland, 1972; Zettel and Ballard, 1979; Gallagher, Weiss, Oglesby, and Thomas, 1983; Cox, Daniel, and Boston, 1985). Clearly, acceleration and ability grouping are appropriate modifications of the regular school curriculum and programs for gifted students (Feldhusen, 1989; Johnson and Johnson, 1989; Kulik and Kulik, 1991). Even Oakes (1986), a rabid enemy of ability grouping, has to admit, albeit grudgingly, that they work for gifted students. Her criticism seems to be that, because gifted students are tracked into accelerated programs, the other, non-gifted students are then deliberately tracked into dead-end curricula and programs. She then concludes that, if gifted students were not provided the programming that they need and deserve, all of the other students would be more likely to receive an appropriate education.

While ability grouping for the gifted has been the strategy which has of late been receiving the most criticism, acceleration has been severly criticized for a long time for its supposed deleterious effects on bright children. The most common concerns are:

1. Standardized tests do not necessarily reflect classroom achievement, so a high score on a test is not acceptable evidence of readiness to move ahead.
2. Acceleration results in gaps in academic skills.
3. Accelerated learning is superficial.
4. Acceleration is detrimental to the social adjustment of younger students (Howley, Howley, and Pendarvis, 1986, p. 137).

Reviews of research on acceleration uniformly show that it is beneficial to gifted students (Clark, 1983; Gallagher, 1985; Kitano and Kirby, 1986; Tannebaum, 1983).

Recent research shows that acceleration does not wreak havoc on the social and emotional development of gifted students, although this is the concern now most often cited by teachers, parents, and administrators who refuse to consider acceleration as an acceptable option for gifted students. Richardson and Benbow (1990) found that, at least among mathematically precocious youth, there was "compelling evidence" to dispel the myth about the social/emotional side-effects of acceleration (Bower, 1990). Although gifted students might have problems making friends and maintaining a positive self-image, especially in adolescence, these difficulties are associated with the dilemma of locating genuine intellectual peers, rather than the effects of their accelerated programs. These researchers noted a slightly positive effect on the social lives of the female participants in the accelerated programs, although the importance of socializing and peer relationships seems to vary with each gifted individual. A follow-up study of the Terman group 60 years later shows that those who were most social, popular, and optimistic as children showed the least intellectual skill and achievement as adults (Tomlinson-Keasey and Little, 1990). The researchers speculate that gifted children decide early whether to concentrate on socializing or intellectualizing, and the intellectual achievers seem to prefer solitude or the company of older people. Acceleration should still be an option for these gifted students, because "In regular classes, many of these children get bored, burned out on school and don't reach their intellectual potential" (Bower, 1990).

Conclusion

Those who are genuinely interested in appropriate education of the gifted must take a deliberate look at the implications of the reforms that are currently sweeping the educational scene. Many of the proposed reforms may go the way of the reforms of yesteryear, but, in the generally heated atmosphere surrounding educational effectiveness in the 90's, there is great potential for mischief. In the proposed reforms, whether they take hold or are only around for a short, fashionable time, there is the potential to undo the advances made for gifted students during the past 70 years. Reforms that place the gifted child back in the regular classroom to be the tutor, captain, monitor, teacher's aide, or bored onlooker do not serve the needs of the gifted child. They may serve other needs of other children, of social engineering schemes, or ideals of equity and "democracy," but reforms that use the gifted child as a tool or a resource are essentially unfair and ultimately will not work. Robbing Peter to pay Paul never works in the long run. Eventually, Peter is going to catch on and he is going to be upset. Both Peter and Paul are entitled to an appropriate education and it is a false dichotomy to maintain that to serve one, the other must be robbed of his rights as an American citizen. The problems that exist in American education can be solved, but not by sacrificing some of the children for the good of the rest. The solutions to these seemingly intractable problems lie before us, but they are difficult, they will take a long time to work, and they will be extremely expensive. Teaching and teachers must be professionalized and specialized, teachers must be empowered to make more decisions regarding how a school is run and how children are taught, teachers must have the status and pay of professionals, and teachers must be highly trained in the art of pedagogy and highly educated in the knowledge of the arts, sciences and skills of human civilization. Ironically, the individuals most capable of achieving these difficult goals are among today's gifted students, for they will be the most inspired and willing to become the teachers who will actualize these solutions.

To receive the exhaustive bibliography for this article and its source, "The Perils of Reform", write the author and enclose a large (9x12), self-addressed stamped envelope. Send to Dr. Edmund B. Hunt, Department of Special Education, Northeastern Illinois University, 5500 N. St. Louis Avenue, Chicago, IL 60625.

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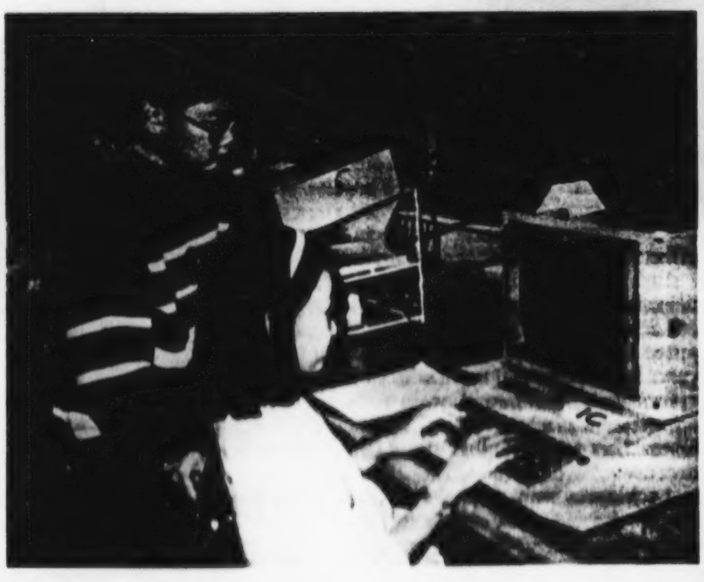

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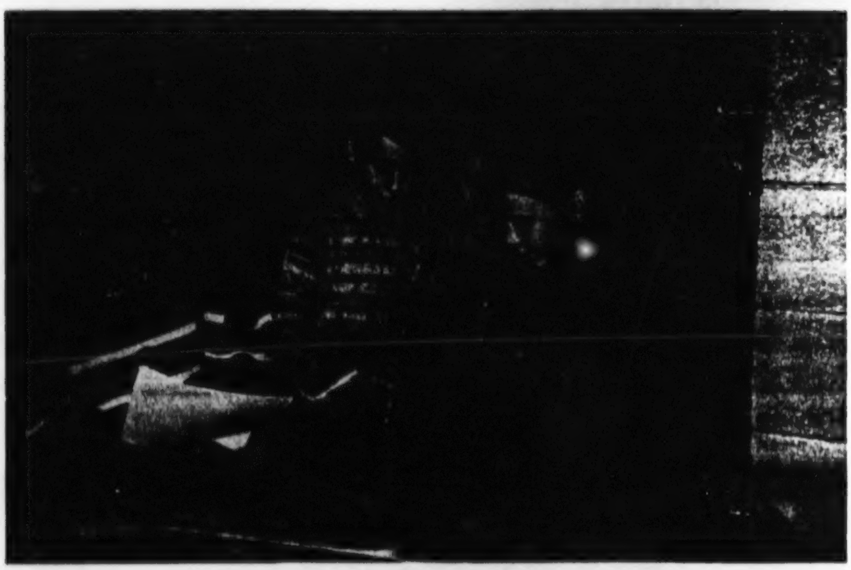

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